624.18

Representative Cement Houses

Brushed Pebble
Cement Exterior

[PAGE]

CCA

REPRESENTATIVE CEMENT HOUSES

Published by
UNIVERSAL
PORTLAND CEMENT CO.
Chicago - Pittsburg

PRICE FIFTY CENTS

PREFACE

PORTLAND CEMENT is a term applied to the finely ground product, resulting from the burning together of various materials of proper chemical composition, which in the case of Universal Portland Cement, are blast furnace slag and pure limestone. It is not called PORTLAND cement because it was made first in Portland, Maine, or in Portland, Oregon, but because the Englishman who first made it, thought he detected a resemblance between the material and a certain natural stone, quarried upon the Isle of Portland, a peninsula on the southern coast of England.

CONCRETE is the hardened rock-like product resulting from a mixture of Portland cement, sand, gravel or broken stone with water. Cement is the material which binds the sand, gravel or broken stone together, the whole being referred to as concrete. There are many brands of Portland cement on the market. Each manufacturer gives his product a special brand name and uses a trademark, which is always printed on the sacks in which his product is packed. The terms, cement and concrete while frequently used interchangeably, are hence in no sense synonymous. In this book

CEMENT houses will be used more frequently than the expression, CONCRETE houses, although either term properly might be applied.

Cement, as a constructional material, probably is best known to the public in the form of concrete sidewalks, steps, retaining walls and imitation rock faced blocks. The use of cement in this kind of construction, represents however, only a very small part of the wonderfully large field of utility in which Portland cement concrete is today employed.

The object of this book is to indicate by illustrations and descriptions, one of the newer but very rapidly expanding fields of the application of cement, namely, in residence construction. It is only within comparatively recent years that any serious attention has been paid by architects, engineers and builders to the advantages offered by cement in this phase of building.

The things which have brought cement houses quite prominently before the home builder, are the popular demand for a fireproof home and the desire for a building material at once economical, sanitary, indestructible, warm in the winter, cool in the summer and one adaptable to practically every style of architecture.

Portland cement concrete embodies all of these advantages. It is the strongest, most efficient and versatile structural material in use today. Concrete is equally suitable for the construction of a working-man's cottage, a suburbanite's bungalow or a millionaire's mansion.

Cement houses are not all constructed similarly. There are cement houses and cement houses. In a general way, they may be divided into five classes, which are the divisions under which they are discussed in this book.

The first class embraces the various forms of reinforced concrete houses, including the monolithic type, those with solid concrete walls and those with hollow walls.

The second class includes the cement block or hollow tile structures with a coat of cement plaster on the exterior.

The third comprises the plain cement block or tile structure with no exterior coat of plaster.

In the fourth class are those with a frame structure of wood, with an exterior coat of cement plaster.

The fifth class consists of cement brick houses.

These several classes do not, of course, include all possible types of cement houses.

None of these various types of houses are necessarily fireproof so that when one speaks of a cement house, it must not be inferred that the house is fireproof. In order that it may be regarded as thoroughly fireproof, the system of construction should fall under either the first, second, third or fourth classes, and should embody the use of concrete on the interior, as well as the exterior.

We can associate the expression FIREPROOF with the term CEMENT HOUSES, only in so far as concrete may be considered as an UNBURNABLE material. Those parts of the house which are built properly of concrete are hence fireproof.

It is not within the purview of this pamphlet to explain the requirements of fireproof construction nor to present plans for cement houses nor to compare their cost with the cost of wood constructed houses but rather to indicate the unusual attractiveness of a concrete home and to point out in a general way, its advantages.

We have attempted to procure photographs of a few

houses, which may be considered as representative of their class, publish the name of the architect and contractor for each with its approximate cost and the opinion of the owner as to the satisfaction which his home affords.

It is believed that the information herein contained will meet a long-felt want for some accurate and definite information as to what has been done in the direction of cement house construction. It is offered to the home-building public with the hope that in it, they will find something which will lead them to build more permanent, more sanitary, more charming, at the same time, cheaper houses, which are free from the constant danger of being swept out of existence, with the lives of the occupants and their oft times priceless contents, by the all-consuming Fire Fiend.

FOREWORD

The houses discussed in this book are not confined to those in which *UNIVERSAL* Portland Cement was used.

Attention is called to the fact that the costs of the residences illustrated, were obtained in practically all cases, from the owners. It is, therefore, safe to assume that the costs, as given, are somewhat high; in some instances, the costs shown, may be regarded as the selling price rather than the actual cost of construction.

We acknowledge our indebtedness to the owners, architects and others, who have assisted us in the preparation of this material, and to them we tender our gratitude.

Reinforced Concrete Houses

THE houses represented in the section immediately following are of reinforced concrete construction, most of them of the monolithic type. These houses are the most approved style of construction. They were not all built according to the same system, as will be made clear upon reading the matter printed in connection with each.

Most of these houses were built entirely of concrete, including the foundations, basements, walls, floors, ceilings, stairways, and in some cases, even the roofs. They are thoroughly fireproof, indestructible, warm in winter, cool in summer, free from the necessity of repairs, and moisture-proof. In these houses there was very little, if any, wood used.

The term, monolithic, used in connection with residence construction, or other forms of concrete construction, is very generally misunderstood. Monolithic, or "one stone," construction is that wherein all of the concrete is cast so as to form practically one piece; there are no smaller separate units. Monolithic concrete is one solid artificial stone, conforming to the shape of the forms or moulds in which it was cast.

RESIDENCE OF MR. J. R. WARE, FT. THOMAS, KY.

The accompanying view gives some idea of the handsome reinforced concrete residence of Mr. J. R. Ware, which was built by the Ferro Concrete Construction Company of Cincinnati, Ohio, and designed by Mr. Gordan Shepard of Ft. Thomas, Ky. The house is located on the beautiful highlands along the Ohio River.

Everything in the construction, excepting the hardwood floors, trim and under-structure of the roof is reinforced concrete, which includes all outer walls, floors, columns, cross-beams and chimneys. The floors and posts of the veranda are of reinforced concrete, while the railing and under-structure of the porch roof are of wood. The roof is of red tile.

As the house is built on the side of a ravine, it was necessary to step the footing. After the footings and piers were built, the house, so far as cement was concerned, was built in three sections. The forms for the basement walls, the columns and floors were built and then poured, and the steel rods were allowed to project in order to secure a proper bond for the next section. After the first section had properly set the form was removed and the material used to build the walls, columns and floors of the first story. The concrete was then placed, and after it had set, the third section was started, using as before, the material from the previous form. This method of construction greatly decreased the cost of the lumber used.

The exterior finish is rough stucco, which was dashed on the concrete with a wire brush, Hydraulic lime being used, which gave a per-

fectly white finish. The total cost of this residence complete was $12,000. In speaking of his house Mr. Ware says. "We are thoroughly satisfied with the house and consider the investment satisfactory. It is fire-proof throughout, and the repairs are almost nothing in a cement house with a red tile roof. It will last a lifetime, and then for several generations."

MR. CHARLES LINDBERG'S RESIDENCE, OAK PARK, ILL.

This is a two-story building with foundations and walls of solid monolithic concrete. The cost of the building complete was $4,000. It was built by a new method of concrete construction, perfected by Mr. C. W. Fellgren, 4874 Magnolia Avenue, Chicago, who also designed the house. Universal Portland Cement was used.

The owner of this residence is Mr. Charles Lindberg, 1173 Lyman Avenue, Oak Park, Illinois. He is thoroughly satisfied with the building throughout. He regards it as a twelve per cent investment, and says that it will not need any painting, is fire-proof, that it is warm in winter, cool in summer, and strictly moisture-proof.

RESIDENCE OF HENRY A. THEIS, HAWORTH, N. J.

The residence of Mr. Henry A. Theis, of Haworth, New Jersey, was designed by Mr. A. C. Pauli, 160 Fifth Avenue, New York. It is a monolithic concrete house, with a recessed porch on one side of the front, and a pergola on the other. A neat balcony, supported by five concrete brackets, relieves the effect of the plain surfaces, and the dark beams of the pergola form a nice contrast with the white plaster. The cost of the house was $6,000.

Mr. Theis says: "I am thoroughly satisfied with the building as a whole, and as an economic investment. While the house was built three years ago, it has not needed any repairs, nor is it likely to need any for some time to come. It is very comfortable in the summer as well as in the winter, and we have had no trouble with moisture, not even in the hardest of storms. The house was not built for me, I having acquired it by purchase from the original owner."

MR. P. G. H. BENNETT'S RESIDENCE, OCONOMOWOC, WIS.

The massive and substantial building shown above, owned by Mr. Fred Pabst, Jr., is the home of Mr. P. G. H. Bennett, and is situated on the Pabst Estate, at Oconomowoc, Wisconsin. All of the larger buildings on this estate are of reinforced concrete. Fernekes & Cramer of Milwaukee designed the buildings, and the work was executed by the Newton Engineering Co., of Milwaukee.

The foundation, basement, outside walls, and some interior partitions of Mr. Bennett's house are of solid concrete, furred with furring tile. The walls were built rough, and one year later the surface finish was put on by wetting the walls and applying Livingstone Bond, a dilute hydrochloric acid treatment. They were then plastered, and finished with a wooden float, the surface thus produced being stippled to give the desired rough effect. This finish has withstood the test of two winters, and thus far has shown no defects. Universal Portland Cement was used throughout. The total cost of this house was $14,000.

MR. GEORGE ENBLOM'S FARM RESIDENCE, KANDIYOHI, MINN.

Two years ago, Mr. George Enblom, of Kandiyohi,, Minnesota, built a monolithic concrete residence for himself. The ground dimensions of the house are 30 feet x 32 feet. The concrete is reinforced with steel rods. The walls are furred on the inside with 1½ inch strips, lathed and plastered, thus making a continuous air space. The exterior coating of plaster is rough cast, with a pebble-dash finish. Universal Portland Cement was used entirely. The total cost of the dwelling was $1,765, itemized as follows.

Excavating	$ 75
Carpentry and form work	1,105
Cement work, including reinforcement	400
Plastering	100
Hardware	85
Total	$1,765

In speaking of his residence Mr. Enblom says: "For the amount of money invested I am weil pleased with my concrete house. The walls have a continuous air space, and though last winter was one of the coldest and most severe winters for years, the walls showed no signs of dampness or frost. The house is nice and cool in summer, and I am well pleased with it in every particular."

RESIDENCE OF DR. A. E. MEADOWS, BIRMINGHAM, ALA.

A monolithic concrete, hollow walled house is situated at No. 2132 South 20th street, Birmingham, Alabama. Mr. L. C. Fallin, No. 1818 Copeland Avenue, Birmingham, designed this residence for the owner, Dr. A. E. Meadows, and it was built by the New Enterprise Concrete Machinery Co., of Chicago; the general contractors being Fallin & Woodrow of Birmingham. The total cost, as given by the builders, was between $7,000 and $8,000.

The walls of the building were constructed entirely of monolithic concrete, the exterior of the basement being finished with an imitation rock surface. The first story was plain smooth trowelled, and the upper story was made in imitation of clap-boarding. The porch railing and piazza pillars, and the low posts alongside the steps are of solid concrete; the railing, posts and bases of pillars are panelled. All of the plain cement surfaces have a smooth trowelled finish, including the porch cornice and second story frieze.

Dr. Meadows says his residence is "highly sanitary, comfortable and handsome."

RESIDENCE OF MR. FRANK W. DARLING, GLENCOE, ILL.

One of the beautiful houses in Glencoe, Ill., is the home of Mr. Frank W. Darling. It was designed by the owner and built under his direct supervision. The arrangement of this house is quite out of the ordinary. No basement is provided, and the living room is on the second floor. The lower floor has a porch partitioned off into a work shop, and a small out-door dining room for use in summer. The kitchen, dining room and pantry are on this floor. A large concrete stairway along the side of the house connects with the large living porch on the second floor. This porch has direct entrances into the living room and one bed room, and thus may be used both as a living porch and sleeping porch.

This house has solid monolithic concrete walls, with a tile backing, and was built in a most unusual manner. The foundation was built of four-way tile conduit laid in a trench fifteen inches wide, and the concrete was poured to make a six inch wall outside of the tile. The four-way tile stopped off six inches above the ground, and single conduit was laid from there up. For eighteen inches above the ground, the forms were built to provide a six inch wall, and above that a four inch wall.

The electric wires were run through the conduits in the walls, insuring perfect insulation. This was all carefully planned before construction, so that in proper places vertical runs of tile were left perpendicularly. The wiring was done for each floor before the concrete was poured. The partition walls were laid of single conduit, plastered on both sides without lathing. Not a crack has yet appeared in the plaster. Universal Portland Cement was used throughout.

The trim was provided for in laying up the conduit. Small blocks were inserted between the tile where trim strips were to go around the room. Before plastering, seven-eighths inch grounds were nailed in place on these blocks and around the window and door frames. Small blocks were also placed where electric outlets were to come to furnish screw holes for the pictures. All outside frames were set flush with the finished surface of the concrete. All forms were made of seven-eighths by six inch flooring, reinforced with short pieces of two by fours. These were then wired tightly and wetly mixed concrete poured in. The gravel used was bought especially for this work, and contained as many colored pebbles as could possibly be obtained. The window mullions and chimneys were poured and the latter was surfaced with brick. The floors were made of solid concrete with two by two nailing strips set in one-half inch above the surface of the concrete. The rough floor, that which had been used for forms, was nailed diagonally across these, and the seven-eighths inch oak floor placed on top.

The second story living porch has a floor fifty feet by twelve feet of suspended, reinforced concrete, five inches thick. All plaster in the house is cement mortar, mixed with torpedo sand only, and rough-trowelled, except in the bathroom and kitchen, where a finish coat of adamant plaster was applied. All of the plaster was given a coat of very thin oil stain.

The form lines showed plainly at first, and the cement had set about a month before the house was finished. Then the whole surface was gone over with a bush hammer, taking off about one-fourth of an inch and breaking the gravel so that a beautiful rough surface was left, showing quite uniform, and leaving the colored pebbles with broken surfaces. The appearance of the house was also further enhanced by substituting in place of the usual concrete trim, one of rough cypress. This was colored a dark brown with a creosote stain.

The total cost of this handsome residence was a little more than $6,000, itemized as follows:

	Mat. del'd.	Labor. (Union Scale)	Sub. Cont.	Totals.
Excavating	.....	$ 54.40	.....	$ 54.40
Tile work and masonry	$ 158.44	258.72	.....	417.16
Concrete	355.34	585.47	.....	
Carpentry on forms & scaffolding	.....	453.61	.....	1,469.72
Surfacing concrete	.....	75.30	.....	
Lumber for forms and rough work.	418.53	.....	.....	418.53
Carpenter work—rough for floors, roof, setting frames, etc.	.....	414.95	.....	414.95
Inside trim	97.42	274.09	.....	371.51
Outside trim	78.71	185.75	.....	264.46
Doors and windows throughout	398.96	.....	.....	398.96
Builders' hardware	80.82	.....	.....	80.82
Shelf hardware	68.08	.....	.....	68.08
Decoration, inside	12.30	136.68	.....	148.98
Decoration outside	4.00	41.40	.....	45.40
Shades and screens throughout	117.21	.....	.....	117.21
Sundries	79.60	.....	.....	79.60
Floors—Hardwood throughout	.....	.....	243.82	243.82
Electric wiring	.....	.....	98.00	98.00
Tile roof and sheet metal work	.....	.....	357.00	357.00
Plumbing and fixtures	.....	.....	548.75	548.75
Heating furnace	.....	.....	150.00	150.00
Plastering	.....	.....	343.20	343.20
Total,	$1,869.41	$2,480.37	$1,740.77	$6,090.55

The following are extracts from a reply to a letter to Mr. Darling, requesting information about his residence.

"I am more than satisfied, not only with the method of construction, but with all of the results obtained. The investment was satisfactory. Though the house cost aboout $2,500 more than I had planned to put into a house, I am sure that this sum is more than made up by the appearance and efficiency of the house. It will easily save three times this sum in repairs and maintenance during the life of the house. It is entirely fireproof throughout—floors and all, with the exception of certain parts of the floors for the second story.

"Absolutely no painting or repairing will be required, except that the rough cypress wood trim will need to be creosoted possibly once in two years. This will cost about $15.

"Aside from the absolute absence of any vibration in the house and its fireproof qualities, I would say that the greatest advantage of this construction comes from the fact that the walls are such perfect insulators that the inner temperature of the house is maintained almost without any effect from outside temperatures. In the hottest summer days, if the windows are closed in the morning, the house is cool throughout the day; then the windows are opened again at night for a thorough airing. I reckon on easily 33 1-3 per cent saving in fuel.

"It is moisture proof. Whether this is entirely due to the monolithic concrete outside or the tile on the inside of the walls I do not know, but there is no chance for moisture inside, either by absorption or by sweating of the walls.

"Aside from the peculiar construction used in this house it may be of interest to readers to know that concrete is not such a difficult proposition to use, but that a man who is neither an architect or a contractor can plan and supervise the construction of the house himself. I believe that one of the features which will delay the popularity of residence construction comes from the fact that a great many people have an idea that there is something very difficult and fearful about cement construction."

MR. J. T. WIKLE'S RESIDENCE, ATLANTA, GA.

The home of Mr. J. T. Wikle was designed by Mr. C. W. Smith, of Atlanta, Ga., and built by the New Enterprise Concrete Machinery Co., of Chicago. This residence is located at North Boulevard and Pine streets, Atlanta, and is of solid monolithic construction.

It can best be described by repeating Mr. Wikle's statement regarding it: "My residence is built of monolithic construction, with a hollow wall. The inner section is five inches thick, and the outer four inches. The air-space between the two is three inches. They are held parallel by means of anchors made of round iron, and at occasional intervals solid concrete ties were made between the walls. Concrete, made of ¾-inch crushed granite was used, the proportion being 1:2:4. The outer wall was finished with a plaster, composed of one part cement to two parts of granite screenings, the entire surface of the wall is smooth, except that the corners are relieved by pilasters. The foundation is a solid wall, and there is a solid water-table on top of this.

"The house is of two stories, and around the top of the second story is a frieze which was formed in the concrete by putting some pressed zinc cornice designs on the inside of the forms. These designs were obtained from a local sheet metal worker. The inner partition and floors are of wood, and the roof is covered with metal shingles.

"In view of the fact that the hollow spaces between the walls is prac-

tically continuous, I have never had any signs of moisture on the inside of the building. The house is warm in winter and cool in summer. As to cost, will say that it probably today would cost something like $7,500 to duplicate my house. It has nine rooms and a basement, is heated by a hot-air furnace. The concrete portion does not need any repairs or painting, although the window frames and wood cornice will, of course, require attention along this line.

"I did not build as an investment, but for a home, but consider the expenditure entirely satisfactory. My house is not entirely fire-proof, as only the outer walls are of concrete, but the exterior effect is quite pleasing, and I am entirely satisfied with the construction."

RESIDENCE OF MR. L. E. WETTLING, LINCOLN, NEB.

A large concrete house which is extremely satisfactory to the owner, Mr. L. E. Wettling, is situated at 1906 Washington Street, Lincoln, Nebraska. It was designed by Mr. James Tyler, Jr., a Lincoln architect. A description of the house can best be obtained by giving extracts from Mr. Wettling's letter regarding his residence.

"I am thoroughly satisfied with my house. It is dry and easier to keep warm in winter than any other house I have ever lived in. It is also cool in summer, and absolutely free from rats, mice or other vermin. There is also a great degree of satisfaction in the fact that we feel abso-

lutely safe in the matter of fire, and never worry about storms or cyclones. I am sure that no earth-quake, short of an opening immediately under the house, could disturb us in the least, and the sense of security which this condition gives, is worth much to us.

"While the initial cost was considerable more than the first estimate, I am satisfied and feel that because there can be no occasion for repairs, painting and replacements, the house will prove a good investment, and cheaper in the long run. The building is 32½ feet by 40 feet on the ground, with front porch 12 feet by 27 feet, kitchen porch 5 feet by 8 feet, eaves extending 4 feet, and a roomy attic, somewhat low, as the picture indicates. There are nine rooms and a full basement, and the fittings are modern in every way, hot water heating, electric light, and all wires are in conduits imbedded in the walls and floors. The footings are 18 inches wide, basement walls 12 inches, walls from basement to the roof 7 inches, and all the floors are 6 inches thick."

The cost of this house was $13,500, which may be itemized as follows:

Carpentry and mill work	$1,800
Cement and form work	8,000
Plastering	200
Plumbing and heating	1,300
Wiring	200
Hardware	200
Fixtures	350
Glass	200
Roof Steel I beam frame, and tile	1,250

This large, handsome, practical house makes an ideal home, for it is comfortable, beautiful and absolutely permanent.

RESIDENCE OF MR. C. A. DRESSER, GLENCOE, ILL.

This fireproof residence, situated at Sheridan Road and Center Street, Glencoe, Ill., is the home of Mr. C. A. Dresser, and was designed by Mr. M. J. Morehouse, a Chicago architect, and executed by Mr. G. A. E. Kohler, of Kohler Brothers, Chicago.

This residence is interesting on account of the fact that it was built by a new and peculiar method of fire-proof construction, the invention of Mr. George M. Graham. This construction uses a new combination of steel tubing, wire, malleable footings and concrete The frame was fabricated completely in the shop, so that the work of assembling it consisted solely of bolting the various parts together with the help of special malleable fittings. The columns rest on concrete footings, and are filled with concrete. The entire framework can be erected before the concrete work is started, and thus the position and quality of the steel can be inspected. The walls and floors are hollow, which reduces the weight of the building to the minimum, and affords perfect insulation. The strain on the floors is carried by wire in tension, which is the most economical way steel can be used, and the walls, floors and partitions form one integral mass, so that the building is absolutely vermin proof and indestructible. Every partition, floor and ceiling is interwoven with wire, and so it is impossible for cracks to develop. All the steel is incased in cement, which prevents corrosion or rust.

With the exception of the piers, the concrete is not depended on to

carry any of the load, but is used only as a stiffening or body for the building. The outside surface was framed by applying wire cloth to the vertical wires and then plastering this with a pebble-dash coat of cement mortar. The roof was constructed in the same manner as the floors, namely with wires in tension, and the finished cement surface was left exposed. This roof was finished with a float, and has stood one year, and no leaks have developed. Universal Portland Cement was used throughout.

This residence is complete with plumbing, hot water heating and electric wiring, all of which were installed without difficulty. With the exception of the interior trim, no wood was used in the construction, as all the exterior mouldings and ornaments were formed of cement cast on the ground and wired in place before the plastering was done. The entire cost of this residence was $12,000.

Following is a self-explanatory letter from the architect, Mr. Morehouse, regarding Mr. Dresser's residence:

"*Gentlemen:*—I am pleased to say that I am thoroughly satisfied with the results in every particular, and while this was the first building ever constructed under this method the work progressed as rapidly as under other ordinary methods. No difficulties were encountered in any of the branches of work, such as plumbing, heating and wiring.

I understand from the owner that when the house was finished he was offered a handsome profit for the property over and above the total cost, and yet I am satisfied that future houses built under this construction will cost fully 20 per cent less than this first building.

The house is absolutely fireproof, and as there is no wood used on the exterior, no painting will ever be required.

The house has stood during the winter and summer, during which time I have frequently examined it, but found no cracks or signs of deterioration of any kind. The interior of the house was decorated as soon as the plastering was finished, and no cracks have developed, even in the ceilings, which were calcimined.

The radiation in the house was figured the same as in other first class residences, and the owner tells me that it was warm during the winter and at no time did they crowd the fire in the boiler.

There is absolutely no chance for vermin to get in the walls and floors, and from a sanitary standpoint it is the most perfect residence I have ever seen. I feel that any one who cares to visit this house will be repaid for their trouble, if they contemplate erecting a residence or any other building."

Very truly yours,

(Signed) M. J. Morehouse.

RESIDENCE OF MR. WM. STRAUMANN, CHICAGO.

This little cottage was constructed of reinforced monolithic concrete, at a cost of $2,900, by Mr. C. W. Fellgren, 4874 Magnolia Avenue, Chicago. The building is located on Lombard Avenue, near Adams Street, and is owned by Mr. Wm. Straumann. Mr. Perley Hale designed it.

The residence was built by an entirely new system of concrete construction. The studding consisted of grooved two by fours, which were set in the usual manner; a mould board with latches attached, which engaged the grooves, constituted the form for one side wall, the other side being constructed in horizontal, movable sections. After pouring the walls, the latches were disengaged, and the mould boards moved upwards, and another section added to the outside. The grooved studding was left in the concrete and metal lath was applied directly. On account of the fact that the studding extended an inch or so from the concrete, an air-space was provided. The exterior wall was plastered with a rough cast coat of cement mortar. Universal Portland Cement was used throughout. This method of construction, where used, has proved decidedly satisfactory, and is extremely simple in operation.

RESIDENCE OF MR. JOSEPH BARNETT, LAKE FOREST, ILL.

The Lake County Flat Wall Builders constructed this house. It is the home of Mr. Joseph Barnett, and is located in Lake Forest, Illinois.

A unique and novel system of concrete construction devised by Col. R. H. Aiken, Winthrop Harbor, Illinois, was used. The walls were built nearly horizontally and raised to an upright position, after the concrete had hardened, by an apparatus which consisted of a number of jacks, worked by a revolving shaft. After the walls were raised they were bonded together by solid concrete pillars. All of the panels in both the lower and upper porch railings, and in the porch foundation were cast and put in place, and the columns and posts are of solid concrete, as is also the moulding under the eaves. The exterior was finished with a pebble dash coat of cement plaster, and the total cost of the building complete, was $3,800. Universal Portland Cement was used.

MR. E. D. BRIGHAM'S RESIDENCE, GLENCOE, ILL.

This house is owned by Mr. Edmund D. Brigham. Regarding his home, he says:

"The reinforced concrete house built by me during the past year, constructed principally during the winter of 1908-9, is located in Glencoe, on Sheridan Road, north of Central Avenue.

"The house has proven to be cool in summer and should be warm in winter, equipped as it is with hot water heat, and, excepting the unusually large amount of window space, is well protected from heat and cold, being solid in its construction.

"From a practical and artistic standpoint, I am more than pleased with the style of building and consider the cost about equal to that of brick or stone."

The type of construction is practically the same as that used in Mr. Frank Darling's residence, a detailed account of which is given in the description of his house. Four-way conduit tile, in combination with a monolithic outer wall, are used as foundation, the upper wall having a one-way tile backing.

The interior plastering is applied directly to the tile. The under structure of the roof, the interior partitions, floors, stair-ways and outside trim are of wood, the roof covering being red tile. The exterior trim was creosoted, hence no painting and little future repairing will be necessary. The exterior surface of the concrete, until recently, was in the same condition as it was when the forms came off; but a short time ago, Mr. Brigham had the surface painted with a thin cement grout, and the appearance of the house is much improved. Universal Portland Cement was used throughout. The total cost of this residence was $18,000.

RESIDENCE OF MR. JOHN SCHEEPERS, HAWORTH, N. J.

This reinforced concrete bungalow, with its roof and porch of solid concrete, was built by the Franklin Society, No. 1 Beekman Street, New York City, N. Y., and the cost of construction was $7,200. Mr. John Scheepers, No. 2 Rector Street, New York, is the owner of the building, and it is located in Haworth, New Jersey.

Mr. Scheepers says the house is satisfactory, and that: "Solid concrete bungalows like mine have, I believe, an appearance of richness and refinement that a wooden or brick house cannot convey; not to forget the paint and repair bills one saves."

RESIDENCE OF MR. BERT ESSEX, INDIANAPOLIS, IND.

Although it has the appearance of being a smooth stone or concrete block building, the residence shown in the above photograph is of monolithic concrete, with hollow walls, and was constructed by the New Enterprise Concrete Machinery Co., who give the cost as $5,000.

Two walls were built with an air-space between, in the following manner: Four mould plates with flanged edges were arranged at required distances apart, and uprights erected at intervals to guide them in their upward progress. The mould plates generally were made in 16 feet sections, and were about 21 inches high. The four members or plates of the mould were adjustable and the door frames, window jams, sills, etc., were set in their place inside of the moulds, the two center plates being made so that they could be adjusted to receive the frames. This insured air-tight joints around all openings. Moulded designs for different face finishes could be attached to the outer plate of the mould, and in this manner a monolithic concrete wall could be built and carried up 21 inches at a time, with any desired wall surface design.

Mr. Bert Essex, the owner of this residence, which is situated in Woodruff Place, Indianapolis, Ind., considers the residence entirely satisfactory, and the house as nearly fireproof as it can be made. He also says it is warm in winter and cool in summer, moisture-proof, and does not have to be painted, which he says takes care of the taxes.

MR. H. B. GREEN'S RESIDENCE, SWARTHMORE, PA.

This monolithic concrete residence was designed by Mr. W. L. Plack, 1206 Chestnut Street, Philadelphia, Pa., and was built by Mr. R. L. Grunes, of Morton, Pa. It is located at Swarthmore, and is the home of Mr. Howard B. Green.

The total cost was $15,000. The concrete foundation walls are 12 inches thick at the base. This is carried for three feet, after which there is a batter of one inch to a foot, making the wall eight inches thick at the first floor line. The walls of the first story are of eight inches of solid concrete, and the second story is paneled. In constructing the forms, the studs are first set, then the window frames put in, and after that, large creosoted planks are nailed to the studs to form the exterior effect: all

the openings are then boarded up, and the concrete poured from the inside, the studs being left imbedded in the concrete.

The house is lathed and plastered. When the walls were being built, a shingling lath with projecting nails was laid horizontally every two and a half feet along the inside forms. When the forms were removed, the vertical shingling laths were nailed on these. The plastering lath was nailed to the vertical shingling laths; thus an air-space was created, and the mortar given a chance to key.

The concrete chimneys were built by putting up three sides of the exterior forms and using a collapsible centering two feet long. As soon as the centering was in place, the fourth side of the outside form was put up, and the concrete poured. The concrete porch railing shown here, if produced in any other solid building material would cost a larger sum, but it costs very little when made of Portland cement. The forms are used over and over again. The columns are substantial, and the railing shows the possibility of Portland cement in decorative and artistic design.

The entire surface of the house was bush-hammered. The hammer first used, weighed nine pounds, and had thirty-six points on one end and twenty-five on the other. The ends were two inches square. The end with twenty-five points gave the best results; the end with thirty-six points was changed to sixteen points, which gave a much better finish and the cost of hammering was less. It was found that the points should be pyramids, with the projecting points two-thirds of an inch apart.

The color scheme of this house is as follows: Red salmon, slate roof, buff cement trimmings for body of house and balustrade, accentuated by brown creosoted rough sawed planks, and a gray cement base. Colored tile decorations were placed under the windows between the porch gables and in various other parts of the house. Mr. Green says in speaking of his house: "I wish to state that this house was built for myself, and therefore, in building it I was particularly careful to have everything that I wanted incorporated into it in such a manner that it would be satisfactory. I am thoroughly satisfied with the building in every way, and the investment has proven satisfactory so far as I am concerned. However, I do not believe that I would be able to get the cost out of it if I wanted to sell it, owing to the fact that people do not appreciate the superiority of Portland cement construction over many others. It is positively moisture proof, and fireproof. The exterior woodwork, what little there is of it, will certainly need painting, but there will be very little repairing to be done to the house."

MR. P. M. BRUNER'S RESIDENCE, ST. LOUIS, MO.

Photographs do not do justice to the exquisite coloring of this monolithic concrete residence. The aggregates used were cement and red granite crystals, with a scattering of black. When the boards were taken down the surface had the appearance of ordinary dead concrete, but as soon as it was scrubbed and washed, all the particles of red granite, with here and there a spot of black, bonded together by light colored mortar, were exposed, giving a surface which is slightly roughened and a color effect

that is beautiful. Its finish is bright and full of life, and the material used is concrete honestly employed, the massive simplicity and strength showing out prominently. It is truly an artistic, picturesque, monolithic concrete house.

The walls are ten inches thick and were cored, and 5 inch by 12 inch air spaces, with 3 inch partitions, run from bottom to top. All the walls were painted with oil. The foundations, basement, interior partitions, floors, and roof were constructed of monolithic concrete, only the windows, doors and interior trim being of wood. The building has nine rooms, including a reception hall and bath, and is equipped with hot water heating, gas and electric service. It is located at 5143 Maple avenue, St. Louis, Mo., and was built five years ago at a cost of $12,500.

Mr. P. M. Bruner is the owner of this house, and Mr. F. Taxci, an architect, whose office is in the Victoria Building, designed it. The contractor was the Bruner Granitoid Company. Mr. Bruner says he is entirely satisfied with his house, and it will not need any painting or repairing for twenty-five years, except on the window frames. It is absolutely moisture-proof. The only combustible parts of the house are the stairs, window and door frames and trim. Surely this is a most satisfactory home, comfortable and permanent, and with the lowest possible maintenance expense.

RESIDENCE OF MR. ROBT. ANDERSON, CINCINNATI, OHIO.

A little deviation from the ordinary in house design is shown in the residence of Mr. Robert Anderson. The description of this building, and

Another View of Mr. Anderson's Residence.

the owner's opinion of it, is best obtained by reading the letter which follows:

"*Gentlemen:*—In reply to your favor of October 20th, I am pleased to state that my reinforced concrete residence, which was built by The Ferro Concrete Construction Company, about four years ago, is satisfactory in every particular, and I think is generally considered a decided success from an architectural and artistic standpoint. The house is not entirely fireproof, as at the time it was built some of the floors were made of wood construction for economy. However, if I were doing it over again it would be made all of reinforced concrete and all fireproof, as the difference in cost is not as great now as it was at that time, and the advantages gained are worth much more than the added cost. The exterior finish consists of a splash coat of Portland cement mortar, that needs absolutely no painting or repairing and never will. The house is warm in winter and cool in summer, because the walls are well insulated, being cored and having air spaces running from bottom to top. This also entirely eliminates any tendency for moisture to penetrate or to condense on the inside walls. The building is located at 2461 Grandin Road, and the architects are Elzner & Anderson, Ingalls Bldg., Cincinnati, Ohio.

"The house being on a steep hillside has two more stories exposed in the rear than in the front. The lowest or sub-basement is used as a garage, and is of the greatest convenience. My residence, with excavation, grading, garden steps, walls, etc., cost about $18,000." Yours very truly,

(Signed) Robert Anderson.

MR. JOY A. WINANS' BUNGALOW, LOS ANGELES, CAL.

A decided departure from the ordinary in cottage design, is shown in the home of Mr. Joy A. Winans. This artistic little bungalow was built by the owner, and Brown Brothers, Cedar Rapids, Iowa, were the architects.

The house is singularly free from expensive detail work, its simplicity being its greatest charm. Living room, dining room, den, hall and kitchen are arranged conveniently on the first floor, while the seemingly small second story contains three roomy bedrooms and a spacious hall. The fireplace in the den and the beamed ceiling of the living room mark the bungalow style of interior treatment. The two rooms mentioned are really one great room, being separated only by the partition bookcases.

The house is constructed with solid monolithic concrete walls, the exterior finish being a light rough-cast plaster coat. Mr. Winans says that the walls never showed moisture, which was contrary to expectations. The architects assert that this dwelling can be built for $4,200 when constructed of wood with a plaster exterior, but Mr. Winans says that there is a difference of fifteen or twenty per cent between the costs of concrete and frame construction.

The Japanese roof treatment gives the building a novel appearance, and in combination with the beautiful background, makes a decidedly pleasing picture, and impresses one with the idea of a cozy, comfortable little home.

The foundation walls of the house are fourteen inches thick, resting on footings twenty to twenty-two inches wide, the ground having been previously thoroughly tamped. The chimneys are built entirely of concrete, the flue-lining provided acting as an inside form, thus making the construction very economical. Supporting piers and columns are also built of concrete. On the inside the walls are lined with two inch terra cotta furring. These blocks are set inside the forms, similar to laying brick, the concrete being tamped in between the outside forms and the terra cotta blocks, the blocks having been previously thoroughly soaked

with water. It was found that the blocks bonded perfectly to the concrete, and could not be torn loose in any place. The walls were reinforced where necessary, directly over windows, and four horizontal courses of ¾-inch wire cable, running clear around the house, were imbedded in the concrete, tying the walls together perfectly, acting as a reinforcement against temperature stresses, and making a house practically earthquake-proof.

The roof of the porch is a six inch slab, reinforced with bars and expanded metal. The top of the slab is painted with two coats of weatherproof paint, on which was placed a mortar coat, troweled and finished and cut into squares as in a sidewalk. This acts as a floor to the opened porch above. The floor of the lower porch is a six inch reinforced slab finished in the same manner. The roof is of dull red Japanese Pan tile, the tile being taken from the run of the kiln, so that there were colors all the way from dark purple to salmon, the general effect being a dull red.

This house has twelve rooms, three baths, and cost $20,000. An extract from Mr. Moyer's letter in regard to his house follows:

"The house was completed in the fall of 1907, and has proven satisfactory in every way. No dampness whatever has penetrated into the house, and no condensation has taken place on the plastered walls. It has been very cool in summer, actual records showing a difference in temperature of eleven degrees between the air in the inside of the house and the outside atmosphere. It is warm in winter, less than one pound of steam being required during zero weather.

"No painting will ever be needed on the outside, except possibly the window frames; the cost of insurance is infinitesimal; there probably will not be $10.00 worth of repairs done in ten years. While the initial cost is high compared with frame, the actual cost in ten years' time will probably be less than frame, if insurance, repairs and painting are taken into consideration."

Ornamental Concrete Table and Chairs of Classic Design.

MR. JAMES J. BRUTTON'S RESIDENCE, WILMETTE, ILL.

The home of Mr. James J. Brutton, located at 613 Central Avenue, Wilmette, Ill., is out of the ordinary on account of its unusual construction. It has a monolithic concrete outer wall with an inner wall of conduit tile. One exceptionally good feature of this house is that the electric wires are all enclosed in conduit pipe.

The house was not finished on the outside except to scrub it with water and a wire brush while the concrete was still green. The trim is of dark wood, and both the porch roof and main room are covered with red tile. The total cost of this house was $7,500.

Mr. Brutton is thoroughly satisfied with the house in a general way, and says that the investment has proven satisfactory. The house is practically fire-proof and moisture-proof, and will need no painting or repairing. The temperature is uniform, being warm in winter and cool in summer, and in the opinion of the owner, a concrete house is very satisfactory. Universal Portland Cement was used throughout.

COTTAGES OF MESSRS. A. F. WEBER AND C. R. CARLSON, CHICAGO.

The two little bungalows shown in the above view were designed and built by Mr. C. W. Fellgren, using his patented system of monolithic concrete construction.

The one with the tile roof is owned by Mr. Arthur F. Weber, and is located at 2027 Estes Avenue, Rogers Park, Illinois, and the total cost was $2,922, itemized as follows:

Excavating	$ 20
Carpentry and interior finish	1,000
Cement work, including reinforcement	600
Plastering	235
Plumbing	250
Heating	275
Wiring	35
Hardware	25
Fixtures	35
Glass	40
Painting	75
Sheet Metal	67
Tile Roofing	265

The building is constructed of solid monolithic concrete, and has a tile roof and hot water heat. The exterior finish consists of a rough cast plaster coat, tinted red.

The house with the shingled roof is owned by Mr. Charles R. Carlson, and is located at 2031 Estes Avenue. The exterior finish on this house was a gray rough cement plaster coat. The cost, including hot water heating, was $2,500.

Mr. Carlson writes that he is thoroughly satisfied with the building, both as a home and as an investment. He says the house is fire-proof, except the roof, and will not need any painting or repairing.

Universal Portland Cement was used throughout in the construction of both of these houses.

MR. MILTON REMLEY'S RESIDENCE, IOWA CITY, IOWA.

A concrete house, sanitary, comfortable, economical and permanent, was constructed by the New Enterprise Concrete Machinery Company, of Chicago, for Mr. Milton Remley, of Iowa City, Ia.

The foundations, basement, and interior partitions of basement are of solid concrete; the walls of the house, the porches, including the floor and roof, are of monolithic concrete. The continuous, hollow wall system was used in the house above the foundations, and the porch rails, floor and roof are of solid construction. The main roof is of red tile. The house is 37 feet by 44 feet, the porch in front, 30 feet by 12 feet, and on the west, 24 feet by 12 feet, making the total length of the porch 54 feet. On the kitchen porch is built a concrete refrigerator, with doors opening in the kitchen, and the ice chamber opening on the porch. The exterior surface of the walls was plastered with cement and sand mortar, mixed with a water proofing compound.

The total cost of this residence was $8,000, itemized as follows:

Excavating	$ 100
Carpentry and form work	2,200
Cement work, including reinforcement	2,300
Plastering	350
Plumbing	425
Heating	530
Wiring	125
Hardware	160
Fixtures	436
Painting	325
Tile roof, copper gutters and lead flashing	625
Mantels and fire-places	160
Architect and sundries	400

Mr. Remley gives his opinion of concrete as a building material for residence construction in this language:

"*Dear Sir:*—I am thoroughly satisfied with my house built of concrete of the monolithic hollow wall construction. It appears to be as firm and strong as the everlasting rocks.

"The foundation, basement walls, and partitions in basement, and the walls of the house are all of concrete. The joists, floor and roof timbers are of wood. The porches are made of concrete throughout. The interior is not entirely finished, but so far as I can judge it is entirely satisfactory, and cannot be otherwise than warm in winter and cool in the summer. I do not regard it entirely fireproof, but very nearly so. The exterior walls are coated with a moisture proof preparation, and I see no evidence of any dampness whatsoever. It is apparently free from moisture.

"I see no reason to regret my choice of material used in its construction. I am thoroughly satisfied that cement is the most practical and durable, as well as economical construction for buildings that are intended to be permanent."

Yours truly, (Signed) MILTON REMLEY.

RESIDENCE OF MR. JOHN J. FLANDERS, GLENCOE, ILL.

This monolithic concrete residence stands near the intersection of Hazel and Sheridan Roads, Glencoe, Illinois. The owner, Mr. John J. Flanders, an architect, with offices at 70 Dearborn Street, Chicago, designed and built this house for himself.

All of the building, including the pillars, railings, porches and trim, excepting the roof, is of solid concrete. The first and second stories are constructed with two three-inch walls with a six-inch air space between them, the third story construction being a combination of monolithic concrete wall and one-way tile. The exterior finish is a rough cast cement plaster coat. The total cost of Mr. Flanders' house was $20,000.

Mr. Flanders says he is thoroughly satisfied with his residence, that it is warm in winter, cool in summer, and fire proof, moisture proof and will not need any painting or repairing.

RESIDENCE OF MR. FRANK E. BOYLE, OCONOMOWOC, WIS.

The massive and substantial building shown above is owned by Mr. Fred Pabst, Jr., and is the home of Mr. Frank E. Boyle, superintendent of the Pabst Estate, at Oconomowoc, Wis., on which the house is situated. All of the larger buildings on this estate are of reinforced concrete. Fernekes & Cramer of Milwaukee, designed these buildings, and the work was executed by the Newton Engineering Co., of Milwaukee.

The foundation, basement, outside walls, and some interior partitions of Mr. Boyle's house are of solid concrete, furred with furring tile. The walls were built rough, and one year later the surface finish was put on by wetting the walls and applying a dilute hydrochloric acid treatment. They were then plastered, and finished with a wooden float and the surface thus produced was stippled to give the desired rough effect. This finish has withstood the test of two winters, and thus far has shown no defects. This is truly a fine example of the wonderful qualities of concrete, the most adaptable and permanent building material. Universal Portland Cement was used throughout.

Mr. Boyle, in speaking of his house, says: "We have found the house absolutely moisture proof, warm in winter, cool in summer, and I do not think it will need any painting or repairing for a great many years to come." The total cost of this house was $12,000.

RESIDENCE OF MR. H. D. HUGHES, GURNEE, ILL.

The substantial little house shown in the above photograph is owned by Mr. H. D. Hughes, of Gurnee, Ill., and was distinctly home-made, for it was designed and constructed by Mr. Hughes and his son without other help. It is of monolithic concrete, with a continuous air space between the walls, and has a concrete roof. The surface was left as it came from the forms.

The total cost of this little home was $1,575, divided as follows:

Carpentry and labor	$ 500
Material for concrete work, including reinforcement	275
Plastering and expanded metal lathing	150
Plumbing	75
Heating	250
Doors and windows	50
Hardware and incidentals	60
Forms	40
Lumber	150
Painting, mostly oil and varnish, inside	25
Total	$1,575

Mr. Hughes wrote as follows:

"*Gentlemen:*—To say that we are satisfied with our house in a general way would be putting it rather feebly. I have sometimes said that I thought it was the only house ever built that gave the occupants the satisfaction that they expected. I have often said that I would not change the plan at *all* if I were to build another. I would very much like to duplicate the house again. With the experi-

ence that I gained in putting up this one I think I could come pretty near getting everything exactly right. Originating, planning and executing as I did, everything myself, I can now see where I could save much time and labor and have a better finished job than this.

"As to an investment it certainly has proved very satisfactory, and the permanency of it is very apparent to every one. I do not see why it will not stand as long as any building ever erected. We will not be like the Romans of old and say that what we have erected can only fall when the earth falls, but we can say that time will have quite a big job on her hands to put it out of commission without outside help.

"I cannot say that the house is entirely fireproof, but only the door and window frames appear on the outside for fire to get hold of. We used metal lath, but the floors, joists and studding, as well as the rafters and roof boards, are of wood, as is also the inside finish.

"The door and window frames, and doors and sash, will require painting. But that is a job that any man can do for himself at odd times, so that the only expense incurred will be for material. The concrete walls and shingles will never need painting or repairing if the work is done as it should be in the first place.

"Everybody tried to scare me with the idea that we would have a damp house, but I cou'd see no reason for it if the walls were hollow. We built hollow walls above the basement, and if anything the air is too dry in the house, as is evidenced by the drying out of all furniture, etc. It is certainly moisture proof.

"I think the idea of making the shingles of concrete, and making them on the roof is the best work that I did in the whole matter. If the idea could be brought before the building world in the right way, so that they could realize the full value of it, I think that the method wou'd become almost universal, and the spread of fire in that direction would be a thing of the past; and the expense of the roof be reduced to the minimum."

With best wishes and full faith in concrete, I am,

Very sincerely yours,

(Signed) H. D. HUGHES.

Ornamental Tablet in Cast Cement.

MR. BENJ. ROOP'S COTTAGE, INDIANA HARBOR, IND.

This cottage was built by an entirely new method of construction. The outside trim, the foundations and porch are of solid concrete, the walls being constructed of cement slabs, ¾ inch thick, twenty-two inches wide, and forty-eight inches long, which were nailed to the sheathing, pointed up, and then covered with a rough cast coat of mortar, composed of Universal Portland Cement, hydrated lime, and cinders. This cottage has five rooms, a bath and hot water heat, and cost $1,825, itemized as follows:

Excavating	$ 30
Carpentry and interior finish	930
Cement or concrete work	530
Plastering	120
Plumbing	135
Wiring	15
Hardware	35
Painting	30

The cottage is located at 3804 Fir Street, Indiana Harbor, Indiana, and Mr. Benjamin Roop is the owner, architect and builder.

MR. SHERWIN CODY'S RESIDENCE, LAKE BLUFF, ILL.

This little monolithic concrete house is located in Lake Bluff, Illinois, and was designed and built by the owner, Mr. Sherwin Cody. The walls were built hollow, with a continuous air space, the exterior surface being washed to expose the aggregates. The interior has a cement plaster coat, sand finished, and the trim is white pine, stained dark. The basement has concrete partitions, and cement steps and floor. The house is conveniently arranged, is heated by hot water, and has the electric wiring in conduits.

In speaking of his house Mr. Cody gives his opinion of concrete as a building material. He says:

"I found the cost a little more than brick. The difference is only on the walls, however, and perhaps $300 more than wood. This is not much on a $4,000 house, for all the other items are the same. Insurance is lower, and I believe repairs will be very much lower, showing more than 10 per cent interest on the extra investment."

Cement Block or Tile Houses with Cement Plaster Exteriors

AVERY excellent type of a home is that in which the construction is of cement blocks or cement tile, plastered on the exterior with a coating of cement. This gives a very substantial wall and if the interior is properly built, the house should be permanent, durable and fire-proof. The several houses following will explain in more detail this type of building which is rapidly growing in popularity.

RESIDENCE OF DR. GEORGE E. HARTER, ELKHART, INDIANA.

The residence of Dr. George E. Harter, Elkhart, Indiana, is a distinct departure in design, adaptation of materials, and planning. It represents the way in which Mission Architecture should be adapted to modern house designing. Pure simplicity has been sought, the designer rigorously avoiding all intricate arabesques and scroll work, which are thought, by some, to constitute and characterize the Mission work. The house was designed by Mr. E. Hill Turnock, and built by Mr. P. T. Longacher, both of Elkhart.

The location of this house, determined, in a large measure, its rather unusual character, for it is situated on the north bank of the St. Joe River. The river front being the south exposure, it was necessary to locate the verandas and balconies on this front, making but a simple entrance on Beardsley Avenue.

The materials used in the construction of the foundations and walls of this house were concrete blocks, reinforced with steel as required by the nature of the ground. The watertable course, sills, balusters, pier caps, flower urns and other ornamental work were constructed of concrete, using white silica sand and cement, which gave a fine gray color. The wall surfaces below the second story window sill, were covered with a rough cast coat of cement mortar, tinted a soft tan color.

The roof is of red Spanish tile, unbroken by dormers, and all castings of second story and cornice members are of rough cypress, stained a strong Vandyke brown, the sash and frames being pure white. The total cost of this home was $8,500.

DR. H. C. HOWARD'S RESIDENCE, CHAMPAIGN, ILL.

Prof. James M. White, of the Department of Architecture of the University of Illinois, designed this large practical residence for Dr. H. C. Howard of Champaign, Ill.

The walls of the house are built of concrete blocks with a double air-space, the work being mostly done by day labor, under the supervision of Dr. Howard and Prof. White. The outside of the building has a white plaster finish, made by using a mixture of cement and white sand, and the corners are water-proofed with paraffine. The cost of the residence was $10,000.

Dr. Howard says that he is thoroughly satisfied with his residence in all respects and that the investment has proven satisfactory. He does not think it will need painting or repairing, as he says there is nothing to paint but the doors, windows and casings. He also wrote that the house is cool in summer, warm in winter, and saves over forty per cent of fuel used.

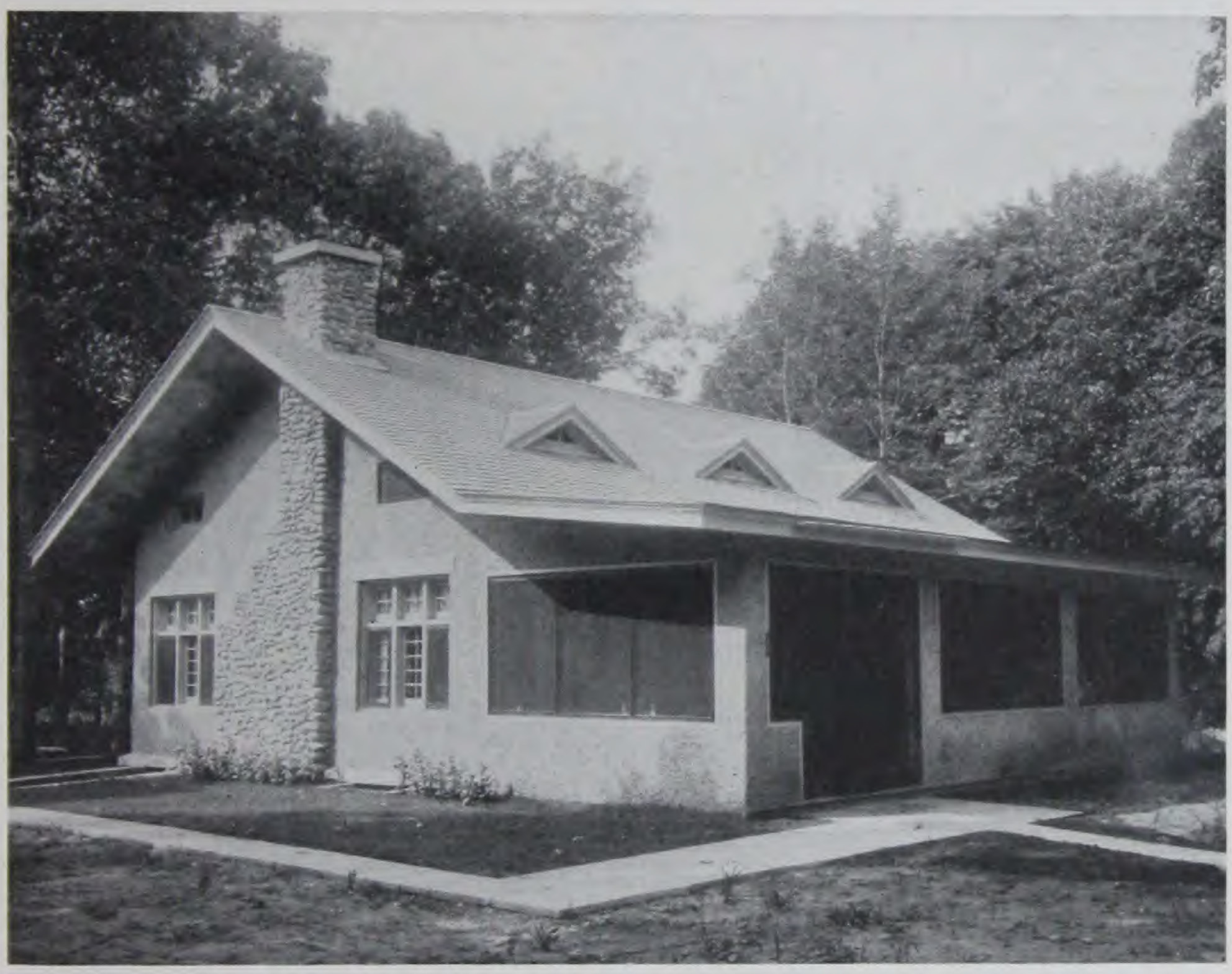
MRS. VAUGHN'S RESIDENCE, YOUNGSTOWN, OHIO.

The house shown in the above photograph is constructed of cement tile with a finish of two coats of cement plaster, smooth troweled. The railings, steps, pillars, window and door sills, and lintels are constructed of concrete. The total cost of this residence was $3200, itemized as follows:

Excavating	$ 30
Carpentry and interior finish	1,600
Cement work, including reinforcement	785
Plastering	180
Plumbing	240
Heating	130
Hardware	40
Glass	60
Painting	135

The residence is owned by Mrs. Vaughn, and it is situated on Glenavon Street, Youngstown, Ohio. The building contract was held by the Concrete Stone & Sand Company of that city. Mr. Frank Kyler, Struthers, Ohio, did the plastering, and Mr. Henderson, of Youngstown, was the general contractor.

MR. HARVEY B. SMITH'S BUNGALOW, MINNEAPOLIS, MINN.



The above house is what might be called a convertible cottage. It is the property of Mr. Harvey B. Smith of Minneapolis, and is built on the rear of his lot at Lake Harriet near Minneapolis. The architect was Mr. Jacob Stone, Jr., Security Bank Building, Minneapolis, and the general contractor was the H. N. Leighton Company, also of Minneapolis. The contractor for the cement work was Nelson Bros. Paving & Construction Co., of Minneapolis.

The building proper is designed for a garage, and has a basement, ground floor and attic. It is constructed of cement block which is plastered on the outside with a rough cast coat of one part cement to three parts small screened pebbles. The walls were then water-proofed with a water-proofing compound mixed with the cement mortar. The chimney is built of cobble stones laid in cement mortar, and the main floor is of concrete six inches thick with a two-inch sidewalk finish. Universal Portland Cement was used throughout. The porch is of temporary construction, cement plaster on lath, and will be torn away when the contemplated residence of the owner is erected on the front of the lot. The little cottage will then be used as a garage.

The total cost of the building was $3,086, itemized as follows:

Excavating	$ 50
Carpentry and form work	1,866
Cement work, including reinforcement	550
Plastering	100
Plumbing	15
Heating	150
Painting	125
Miscellaneous	230

In regard to the building of this house, Mr. Smith says: "This building could be duplicated for $500 less cost, as there was a great deal of changing, with consequent waste and loss of time."

CONCRETE STONE & SAND CO.'S CEMENT TILE HOUSES, YOUNGSTOWN, OHIO.

The Concrete Stone & Sand Co, of Youngstown, Ohio, constructed these four houses for Guthman & Cantwell, a real estate firm. The cost of each house was $1,000, no plumbing or mantels being included in this price.

The houses are constructed of concrete tile throughout, the part above the water-table having an exterior coat of cement plaster. Both the main and porch roofs are covered with slate, the porch proper being of wood with tile supports.

Many more of this same type of dwelling are to be constructed during the coming year.

MR. FRANK H. RAY'S RESIDENCE, YOUNGSTOWN, OHIO.

The above house and garage, rather striking in appearance because of the white surface and dark trimmings is located at 1618 Ohio Avenue, Youngstown, Ohio, and was designed by the owner, Mr. F. H. Ray. The Concrete Stone & Sand Co. built this house, using cement tile for the walls and partitions. The floors are of reinforced concrete, 7½ inches thick, and the exterior surface consists of two coats of cement plaster, float finished and applied directly to the tile.

The total cost of this handsome little residence and garage was $5,200, itemized as follows:

Excavating	$ 150
Carpentry and form work	2,100
Cement work, including reinforcement	1,405
Plastering	250
Plumbing	400
Heating	135
Wiring	85
Hardware	100
Fixtures	90
Glass	220
Painting	265

Mr. Ray says that he is perfectly satisfied with the house; the investment has proven satisfactory; the house is moisture proof, and practically fire-proof. His letter follows:

"*Gentlemen:*—Since I was the first man here to construct and build a cement tile house, some of my experiences and investigations might be of value to you.

"In the first place, when I decided to build a house I determined to have the upkeep of the building down to the minimum. I first secured a bid for a brick veneer house covered by the same plans as used in the cement tile house I finally built. The price was so high I was discouraged. I submitted the plans to another contractor, who bid on a wooden building, which was, of course, less, but while he was figuring on the plans I went to a ball game and noticed from the car a concrete house that had been recently built. I liked its appearance so much that on the following day I went out and examined same and found that it was built by the Concrete Stone & Sand Co. of this city. While there were many things about it that "looked good to me," there were others that looked so bad that I would not, at any price, have contracted for a house of the same construction. The people, however, that lived in the house were very much pleased with it, and told Mr. Pauly of the Concrete Stone & Sand Co. of my visit, which resulted in his calling on me. I told him the things that I objected to in this house and the things I favored, and found the objectionable things had already been overcome, and they were manufacturing a tile of entirely different type. The result was that I secured three of their tiles, sizes 8x8x10, the concrete being one inch in thickness, and commenced experimenting with them. I also secured the same number of clay tile and put them to the same test, the last of which was: I put a coat of cement plaster on each and after they had stood about a week the plaster would scale right off the clay tile, but the plaster on the cement tile could not be taken off at all. I also soaked the tile in water for two hours after weighing it and found that it had not absorbed enough water to make a difference in weight perceptible. I also put the clay tile and cement tile in fire and heated them very hot, then threw a pail of water on them. The clay tile flew to pieces and the cement tile seemed to be harder than it was before, and neither cracked nor broke.

"The results of these and other experiments led me to let the Concrete Stone & Sand Co. bid on my plans. Their bid was $1,600 less than veneered brick and about $300 less than a building made entirely of wood, which resulted in their getting the contract.

"I think when I say to you that my house is so entirely satisfactory, also my garage, that if I was to construct a building of any kind today it would be of concrete tile, in preference to either wood or brick, at an equal or reasonably greater price. I believe cement tile will lead all other materials for dwellings as soon as its merits become well known. If I can answer any questions or furnish any further information I would be pleased to do so. I am,"

Yours truly. (Signed) F. H. Ray.

RESIDENCE OF MR. F. S. E. GUNNELL, HAWORTH, N. J.

Haworth, New Jersey, probably has, in proportion to its size, more houses of concrete than any other town. Various types are in evidence, and different systems of construction are used. The story and a half cement house seems to be very popular.

One of these, the residence of Mr. F. S. E. Gunnell, is shown in the above photograph. It was designed by Mr. A. C. Pauli, of New York, and built by the Haworth Store and Building Company, of Haworth, N. J. The cost of the house complete was $6,500.

The foundations are constructed of rock-face cement block. Above the foundations, smooth faced block were used, the exterior finish being a smooth troweled coat of Portland cement mortar. The porch is constructed entirely of concrete.

Mr. Gunnell is well satisfied with his house, both as an investment and as a home, and says that it is warm in winter, and cool in summer.

CEMENT HOUSE AT MAYWOOD, ILL.

This seven room, plastered concrete block house has just been completed by the Western Cement Construction Company, of Maywood, Illinois, and is located at Eighth Avenue and Fifteenth Street, in Maywood. It is heated by hot water, and is equipped with a colonial fireplace, buffet, and oak and pine trim. It will need no painting or repairing, is practically fireproof, and has a concrete roof. The total cost of construction was $3,400.

MR. HENRY A. TOBELMANN'S BUNGALOW, WARREN, ARIZ.

A little departure from the usual in bungalow design is shown in the residence of Mr. Henry A. Tobelmann, of Warren, Arizona. The building is constructed entirely of cement blocks, the smooth faced blocks being plastered with a mixture of 1:2 Portland cement. The house was designed by Mr. Fred Hurst, of Bisbee, Arizona; Olson & Mott, of that place, being the general contractors and Mr. A. E. Hurst having charge of the cement work.

The total cost of the place was $2,200, itemized as follows:

Excavating	$ 25
Carpentry and interior finish	990
Cement work, including reinforcement	450
Plastering	260
Plumbing	180
Wiring	40
Hardware	60
Fixtures	60
Painting	135

That the house is satisfactory is proved by the following:

"The building has been found most satisfactory in every way. This climate is known for its dryness, as well as for its sudden changes of temperature between day and night. Houses built of wood do not last long in this climate, and until the advent of cement blocks, no houses were as suitable for the peculiar condition existing in the southwest, as adobe or mud structures. The general objection to adobe was its attraction for centipedes, scorpions, etc. A cement block house is absolutely tight and proof against these conditions. Another objection to adobe houses was the fact that plaster would not adhere to the walls for any length of time.

"The investment has been satisfactory. The cost, although slightly more than wood, is not excessive and will readily be repaid in a short time. The house is not fireproof, but I am charged only one-half the insurance rates that are charged to wooden structures in the same neighborhood. No repairs, except on wooden parts of house, will be necessary.

"It is warmer in winter and cooler in summer, and warmer at night and cooler during the day than any wooden house I have been in in the territory. Have never experienced any indications of the moisture penetrating the walls. From about June 15th to September 15th we have rain nearly every day. This constitutes our rainy season. Even during our heaviest showers we have experienced no trouble."

(Signed) HENRY A. TOBELMANN,
No. 874 Warren, Cochise Co., Arizona.

Cement Block Houses

CEMENT blocks are made from small fragments such as sand, gravel and broken stone, united by Portland cement into a solid mass formed by means of moulds into blocks. They may be regarded as artificial stone.

Cement blocks were probably the earliest form of concrete used in residence construction. They are made on machines in such a way that practically any kind of a surface may be had. In the early development of the cement block industry, the mistake was made of making the blocks in imitation of stone, and their use was based upon their resembling natural building stone. The success of the industry seemed to depend upon the ability of the block makers to imitate stone, and here it was that the cement block met its greatest obstacle. It soon fell into disrepute with architects and persons of taste and judgment.

The rock-face type of cement block is, however, gradually falling out of use, and is being supplanted by cement blocks which pretend to be nothing but cement blocks. These are rapidly finding great favor, both among architects, builders and home owners.

Plain faced cement blocks, bush-hammered blocks, and blocks vertically or horizontally tooled, beveled or

MR. E. W. WAMPLER'S RESIDENCE, CINCINNATI, OHIO.

This square, practical concrete block house was designed by James Gilmore, Fourth National Bank Building, Cincinnati, Ohio. It is located on the southeast corner of Oakland and Paddock Roads, Cincinnati, and was built by the owner, Mr. E. W. Wampler.

The foundations are built of solid concrete, and the walls above the water table are of smooth faced concrete blocks, with plain cement mortar joints. The exterior surfaces are not water proofed.

The total cost of this residence was $6,325, itemized as follows:

Excavating	$ 200
Carpentry and interior finish	2,400
Cement work, including reinforcement	1,600
Plastering	350
Plumbing	400
Heating	400
Wiring	50
Hardware	75
Fixtures	100
Glass	75
Painting	150
Sheet Metal	125
Tile Roof	400

Mr. Wampler's letter concerning his residence follows:

"*Gentlemen:*—In reference to my residence, which is made of cement blocks, would say that I am perfectly satisfied with the construction in every particular, and consider it absolutely fireproof, warm in winter and cool in summer.

Have experienced no difficulty with moisture, and as there is practically no wood work about its construction, I do not expect paint bills to bother me.

I cannot see where any other form of construction has anything on cement and can cheerfuily and unhesitatingly recommend this form of construction to anyone desiring a good substantial home." Yours truly,

(Signed) E. W. WAMPLER.

MR. JOSEPH P. SHERER'S RESIDENCE, MILWAUKEE, WIS.

An excellent example of a cement block house is the residence of Mr. Joseph P. Sherer, which is located at 567 Summit Avenue, Milwaukee, Wis., and which was designed and built by the owner.

It is constructed of two-piece cement block, and built in the Mission style of architecture. The interior was plastered directly on to the blocks with no furring, while the exterior was plastered only above the second story. Universal Portland Cement was used throughout.

The total cost of this residence was $13,500. Mr. Sherer says the house is warm in winter, cool in summer and moisture proof. He is thoroughly satisfied with the building, and the investment has proven satisfactory. He considers the house fireproof.

RESIDENCE OF DR. F. A. KARST, WILMETTE, ILL.

An attractive concrete tile residence is owned by the Misses Hopkins, 1545 Ohio Avenue, Youngstown, Ohio. The owners, assisted by the contractor, Mr. Wm. Christie, 178 Silver Street, designed the house, and Mr. Frank J. Kyler, of Struthers, Ohio, did the cement work. The house was left unplastered, except under the gables, where a pebble dash plaster was applied. The total cost of this house was $4,744, itemized as follows:

Excavating	$ 140
Carpentry and form work	2,101
Cement work, including reinforcement	1,203
Plastering	300
Plumbing	240
Heating	140
Wiring	80
Hardware	90
Fixtures	100
Glass	200
Painting	150

An extract from the letter the Misses Hopkins wrote regarding the house, follows:

"The exterior of the body of the house was left unplastered at our request. The effect of the cement blocks with their shades of original color is that of an old English stone house, and we wished to retain that effect.

We employed no architect, but with the assistance of the contractor drew up our plans. A great many people have inspected the house from basement to roof and all concede that it is a well constructed and a convenient home."

The Misses Hopkins also say that their house is fire-proof, moisture-proof, warm in winter and cool in summer, and that it will not need any painting or repairing; that they are thoroughly satisfied with the building in a general way, and that the investment has proven satisfactory.

ers it fireproof, and the only painting needed will be on the window frames and interior. The house is warm in winter, cool in summer and moisture-proof. Dr. Karst's letter reads in part: "It is perfectly sanitary, and I would build of no other material than this. I have lived in frame, brick and stone houses, but have never had one so dry and satisfactory in every way as this. I have lived for four years in this house and can see nothing that will call for repairs. There is one thing about my house which appeals strongly. We never hear anything from the outside. No noises seem to penetrate, although we have but single windows, fitted with patent weather-strips. We know nothing about the weather, other than what we can see through the windows, until we go outside."

An excellent example of a cement block house is the residence of Mr. Joseph P. Sherer, which is located at 567 Summit Avenue, Milwaukee, Wis., and which was designed and built by the owner.

It is constructed of two-piece cement block, and built in the Mission style of architecture. The interior was plastered directly on to the blocks with no furring, while the exterior was plastered only above the second story. Universal Portland Cement was used throughout.

The total cost of this residence was $13,500. Mr. Sherer says the house is warm in winter, cool in summer and moisture proof. He is thoroughly satisfied with the building, and the investment has proven satisfactory. He considers the house fireproof.

THE MISSES HOPKINS' RESIDENCE, YOUNGSTOWN, OHIO.

An attractive concrete tile residence is owned by the Misses Hopkins, 1545 Ohio Avenue, Youngstown, Ohio. The owners, assisted by the contractor, Mr. Wm. Christie, 178 Silver Street, designed the house, and Mr. Frank J. Kyler, of Struthers, Ohio, did the cement work. The house was left unplastered, except under the gables, where a pebble dash plaster was applied. The total cost of this house was $4,744, itemized as follows:

Excavating	$ 140
Carpentry and form work	2,101
Cement work, including reinforcement	1,203
Plastering	300
Plumbing	240
Heating	140
Wiring	80
Hardware	90
Fixtures	100
Glass	200
Painting	150

An extract from the letter the Misses Hopkins wrote regarding the house, follows:

"The exterior of the body of the house was left unplastered at our request. The effect of the cement blocks with their shades of original color is that of an old English stone house, and we wished to retain that effect.

We employed no architect, but with the assistance of the contractor drew up our plans. A great many people have inspected the house from basement to roof and all concede that it is a well constructed and a convenient home."

The Misses Hopkins also say that their house is fire-proof, moisture-proof, warm in winter and cool in summer, and that it will not need any painting or repairing; that they are thoroughly satisfied with the building in a general way, and that the investment has proven satisfactory.

MR. D. C. MEEKER'S RESIDENCE, MONTICELLO, IND.

A large, substantial concrete block house, which is exceedingly interesting because it is entirely different from anything of its kind, is located in Monticello, Indiana. It is the home of Mr. D. C. Meeker, and was built under his direct supervision at a total cost of $7,000. It was designed by Mr. Samuel Young of Monticello.

The most unusual feature of the house is the four stately columns standing in pairs on each side of the entrance steps. These are constructed entirely of monolithic concrete.

The foundation is built of rock-faced block, and the body of the house is of smooth-faced block with an alternate arrangement of two sizes of the stones. The corners continue this same arrangement of width, but rock faced block are used in forming the pilasters. The blocks used in the house were made by the wet process, the rock faced blocks being made of a mixture of one part cement to three parts sand, and the smooth faced blocks of one part cement to seven parts sand.

Mr. Meeker in speaking of his house says: "The house has been satisfactory for three years. No dampness noticed on the interior and walls do not show dampness only slightly after rain. The dead appearance of most concrete walls is entirely absent. We have done considerable work since, part of it waterproofed, made with tamped blocks, but none of it shows up in comparison with the blocks made by the wet process."

RESIDENCE OF MR. F. T. BAILEY, MAYWOOD, ILL.

This smooth-faced concrete block house was built by the Western Cement Construction Co., of Maywood, Illinois, and is located at 8th Ave. and 15th St., in Maywood, Ill. Mr. F. T. Bailey is the owner.

The total cost of construction was $3,500, and the house has seven rooms and an attic. The walls, porch, steps, roof and coal bin are of concrete. The building is heated by hot water, and is equipped with a buffet, colonial fireplace, combination colonial fixtures, and oak trim.

Houses of Cement Plaster on Wooden Frame

THE several houses illustrated in the section immediately following are those of the cement plaster on wooden frame type of construction. This style has met with a great deal of favor in suburban communities, is comparatively cheap and at the same time elegant and comfortable. Homes of this form of construction will be found in all colors and combinations of colors. One Chicago firm has a cement plaster composition on the market and state that they offer four thousand different shades of colors for cement house exteriors. Houses of this type are not fireproof.

MR. NELSON L. BUCK'S RESIDENCE, CHICAGO.

A large roomy house built along thoroughly practical lines is situated at 9901 Longwood Blvd., Chicago, and is the home of Mr. Nelson L. Buck. It was designed by the architect, Mr. Francis M. Barton, Medinah Temple, Chicago, and was built by Mr. John Glass.

It is a large square wooden frame house, but its exterior coat, with its broad expanse of white plaster surface, gives it the effect of a substantial concrete residence. The cost of this house was $6,500.00, and a more comfortable or homelike residence, which would give as much satisfaction to its owner, could hardly be built for the same price. Mr. Buck is very much pleased with his home, and considers his investment entirely satisfactory.

RESIDENCE OF MRS. C. K. PARMELEE, KENILWORTH, ILL.

Mrs. C. K. Parmelee's residence in Kenilworth, Illinois, is a good example of modern stucco work. The house is of frame construction, and was built by Mr. T. B. Carson, of Evanston, Illinois, and was designed by Mr. George W. Maher, of Chicago.

The finish is a gray rough cast coat of Portland cement plaster applied to metal lath, the work being done by Hanson & Hoth, of Winnetka, Ill. The total cost of this residence was $14,164, which includes a number of unnecessary things, such as an aluminum clothes dryer, extra mantel decoration, etc.

In speaking of her home, Mrs. Parmelee says:

"*Gentlemen:*—My house has proved most satisfactory in every particular, and I am delighted with it. It is entirely free from moisture, and I have found it both warm in winter and cool in summer. I consider Portland cement the ideal building material for suburban and country houses, not only for comfort and utility, but for beauty. It is highly artistic and lends itself most gracefully to almost any kind of architecture."

Very truly yours,

(Signed) MRS. CHARLES K. PARMELEE.

MR. R. W. EVANS' BUNGALOW, CHICAGO.

An interesting example of Mr. Frank Lloyd Wright's originality of design is located at 9914 Longwood Blvd., Chicago. It is owned by Mr. R. W. Evans, and was built by Mr. John Wilkinson, 1757 West 102nd St., Chicago.

One seldom encounters as beautiful a picture as this bungalow makes with its surroundings, when the foliage is at its best. Placed high on a ridge and well back among the trees, with a wide sloping lawn in the foreground, and a dark green background of shrubbery, it indeed presents a charming picture, impressing one with the idea of a cozy, comfortable home.

The long rakish bungalow effect obtained by the use of Japanese roofs, makes this a unique and artistic residence. The total cost was $12,000. The house is of frame construction with dark trim on the outside and light trim on the inside, and the exterior coat is white plaster, sand finished. The arrangement of the house makes it ideal for its purpose. The main part of the lower floor is a large living room, the upper floor being reserved for bedrooms and the like. One of the wings at the side is used as a dining room with a porte-cochere at the extreme end; the other wing is an open-air porch which is used as a dining-room in summer.

The house extends across the lot, but with the open porch at one end and the drive at the other, one goes through the house instead of around it. This is an admirable example of adaptability, illustrating that the residence can be, and should be, constructed to suit the grounds.

MR. JORDAN B. COTTLE'S BUNGALOW, CHICAGO.

This unique little bungalow is the home of Mr. Jordan B. Cottle, 7114 Palmer Ave., Chicago, Ill. It was designed by Mr. R. W. Zimmerman, a Chicago architect, and the contractor for the cement work was Mr. Wm. J. Woodard, 1438 East 55th St., the general contractor being Mr. Wm. Crow, 64th St. and Madison Ave.

The house is of frame construction, the upper half covered with a rough cast plaster coat, composed of a mixture of cement and small cinders. The dark wood forms a pleasing contrast with the white strips and cornice boards, the horizontal lines being thus accentuated.

The total cost of this little bungalow was $4,500, itemized as follows:

Carpentry, interior finish and plastering	$2,800
Plumbing	300
Heating	400
Wiring	100
Hardware	75
Fixtures	150
Glass	90
Painting and decorating	150
Extras	435

Mr. Cottle is thoroughly satisfied with the building and says the investment has proven satisfactory, and that the house is decidedly moisture-proof.

RESIDENCE OF MR. C. E. MATTHEWS, OAK PARK, ILL.

On Kenilworth Avenue, in Oak Park, Illinois, the residence of Mr. C. E. Matthews is located. The house cost $10,000, and was designed by the Chicago architects, Talmadge & Watson; Mr. J. S. Bernard, of Oak Park, having the general contract, and Mr. J. W. Farr, of Oak Park, the cement work.

The building is of frame construction, with a cement plaster exterior and a solid concrete foundation. The exterior finish was applied to one inch wood lath, the first two coats being Portland cement mortar, the last coat composed of white Portland cement, stone screenings, water-proofing and color.

Mr. Matthews is thoroughly satisfied with his residence, and considers a plaster house very excellent for his needs.

RESIDENCE OF MR. GEORGE A. LOUGEE, MADISON, WIS.

The residence shown in the above photograph is the home of Mr. George A. Lougee, and is situated on Ingersoll Street, Madison, Wisconsin. Claude & Starck of Madison designed this building, and their designs were executed by Mr. Joseph Tyrell, Mr. T. C. McCarthy being the contractor for the cement work. Both the contractors are located in Madison.

The foundations of the house are solid concrete, the building proper being a frame structure veneered with tile to which a rough cast plaster coat was applied. The total cost was $15,940, itemized as follows:

Carpentry and form work	$6,604
Cement work	2,004
Plastering	960
Plumbing	1,600
Heating	1,050
Wiring	223
Hardware	250
Fixtures	600
Glass	450
Painting and decorating	1,200
Sheet Metal and slate	664
Tile	200
Refrigerator	135

Mr. Lougee is thoroughly satisfied with his home, and says that it is moisture-proof, warm in winter and cool in summer, and will not need any painting or repairing, except on the wood trimmings. One desirable feature of this house is the tile furring. This makes the building slow burning and the temperature of the inside more uniform.

PROF. E. A. GILMORE'S RESIDENCE, MADISON, WIS.

Another of Architect Frank Lloyd Wright's designs is the unique and attractive house of Prof. E. A. Gilmore, of the University of Wisconsin.

The long, rakish Japanese roofs and balconies are in evidence, while the broad panels of smooth, white cement plaster, accentuated by rough dark trim, give the residence a marked individuality.

Mr. George Bischoff, a contractor, did the construction work, and the total cost of the place was $10,000. Prof. Gilmore is very well pleased with his house, and regards the investment as entirely satisfactory.

MR. FRANK B. WEBSTER'S RESIDENCE, HINSDALE, ILL.

The building shown above is the home of Mr. Frank B. Webster, and is located in Hinsdale, Illinois. Perkins & Hamilton, Hartford Building, Chicago, were the designers, and Mr. Ole Anderson, of LaGrange, Ill., and Mr. D. R. Brall, of Hinsdale, were the contractors, the former of the framework, and the latter of the cement work.

The total cost of the dwelling was $10,500. Mr. Webster is satisfied with his house, both as a home and as an investment. He says that it is moisture-proof, warm in winter and cool in summer, and will not need any painting or repairing.

SUMMER HOME OF MR. HERMAN J. ESSER, CEDAR LAKE, WIS.

The summer home of Mr. Herman J. Esser, a Milwaukee architect, is located at Cedar Lake, Wisconsin. The general contractor for the building was Mr. Otto Boettcher, Schlesingerville, Wisconsin, and for the cement work, Ernst Jahn & Sons, 908 Burleigh Street, Milwaukee, Wisconsin.

The house is of frame construction, the exterior finish being three coats of Portland cement mortar on wood lath. The last coat is colored buff, and has a rough surface which was produced by splashing water on the plaster with a broom.

The total cost of the house was $7,300, itemized as follows:

Excavating	$ 300
Carpentry and interior finish	3,800
Cement work	550
Plastering	450
Plumbing	600
Heating	450
Wiring	75
Hardware	85
Fixtures	140
Glass	75
Painting	550
Sheet Metal	225

Mr. Esser says: "I am more than pleased and satisfied with cement plaster, as to its wearing qualities and general appearance. The plastering has not cracked and looks as well as the day it was finished; the house is cool in summer, and absolutely moisture-proof."

MR. C. W. HELDER'S RESIDENCE, OAK PARK, ILL.

A unique plaster residence is located at 629 Fair Oaks Ave., Oak Park, Ill. It was designed by Mr. Charles E. White of Oak Park, and is the home of Mr. C. W. Helder. The house is of frame construction, with an exterior coat of rough cast cement plaster on No. 24 galvanized expanded metal lath. The plaster was mixed in proportions of two to one of lime and cement. The house was not water-proofed except the foundations, which were given a coat of tar.

The total cost of this little residence was $4,640. Mr. Helder, in speaking of his house says: "I have no hesitancy in saying we are very well pleased with our cement house, which we have occupied for three years. The house has cost nothing for repairs, and gives full indications of continuing to do so, and the only painting necessary is on the small amount of exposed woodwork, comprising door and window frames, porch floors, etc. We have found the place cool and pleasant in summer, and it has required no more fuel to keep comfortable in winter than we used in our flat in the city, in spite of the large glass areas. We have experienced no trouble whatever from moisture, and the metal lath, where the same can be gotten at for examination, shows not the least sign of rust. We can certainly safely advise the use of cement construction, where the use of frame structure is contemplated.

"Another feature particularly noticeable to me has been the absence of all vibration, even during the highest winds when the house stood alone with vacant property on all sides of it."

MR. EMIL RUDOLPH'S RESIDENCE, HIGHLAND PARK, ILL.

Another very attractive house, designed by a Chicago architect, Mr. George W. Maher, is the home of Mr. Emil Rudolph, and is located at Highland Park, Illinois.

The contractor for the building was Mr. Fred Clow of Highland Park. The house is of wooden frame construction, plastered on metal lath with two coats of Portland cement mortar, the latter being rough-cast and containing two per cent of water-proofing compound. To this surface two or three coats of a light green paint were applied, which rendered the color uniform. The total cost of this residence was between $10,000 and $12,000.

Mr. Rudolph says: "The building was erected three years ago, and the cement exterior is just as good as new. Our house is warm in winter and cool in summer, and I attribute this in some degree to the use of the water-proofing cement."

DR. STOCKMAN'S RESIDENCE, MASON CITY, IOWA.

A striking example of unique style of architecture, combining the attractive with the comfortable, is exemplified by the residence of Dr. G. C. Stockman, of Mason City, Iowa.

It is a wooden frame house with an exterior coat of rough-cast white plaster. The foundation and basement floor are of solid concrete. The basement also contains a large cistern, made of concrete, reinforced with wire.

The contractor for the work was Mr. Christ Rye, of Mason City, and it was executed under the personal supervision of the architect, Mr. Frank Lloyd Wright. The cost of the house complete was $7,000.

Dr. Stockman says that his house is thoroughly satisfactory, both as a home and as an investment, also that it is warm in winter, cool in summer, moisture-proof, and will need no painting or repairing.

MR. C. W. SPOFFORD'S RESIDENCE, EVANSTON, ILL.

This house is owned by Mr. C. W. Spofford and situated at 2242 Orrington Ave., Evanston, Illinois. The long veranda, with its square columns and numerous arches, the large plain walls with their ornamental mountings, combine to make a most interesting type of residence. Mr. Edgar Ovet Blake, 621 Davis Street, Evanston, Illinois, was the architect, Mr. Peter Thelen, of Wilmette, the carpenter, and the contractor for the cement work was the firm of Uecker & Forbeck, of Evanston.

The house is of wooden frame construction, with a plaster exterior coating, but an unusual method of insulation was used. Tar paper was attached to the pine sheathing, then ½ inch furring strips, 1½ inches wide were nailed on 12 inch centers. Painted metal lath was tacked to the furring and then three coats of Portland Cement plaster were applied and smooth finished. The plaster on the chimney was applied directly to the bricks. The front porch and steps and basement floors were made of solid concrete, and the total cost of the residence was $10,000.

RESIDENCE OF MR. O. W. PAQUE, CHICAGO.

This little bungalow was designed by Mr. H. H. Waterman, a Chicago architect, and is situated on the Ridge at 10036 Longwood Blvd. It is the home of Mr. O. W. Paque, and was built for him by Mr. John Glass.

The principle of the house being built to fit the lot is illustrated here. The lay of the land was exactly suited for a low, flat building, and Mr. Paque's bungalow seems to fit in as if the location was made for the house instead of the house for the location. A pleasing feature is the foundation of field stones. Above the foundation the house is constructed of wood with a white exterior coat of rough cast plaster on metal lath.

The total cost of the house was $9,000, itemized as follows:

Carpentry and form work	$2,500
Material for concrete work, including reinforcement	1,200
Plastering	700
Plumbing	675
Heating	775
Wiring	150
Hardware	250
Fixtures	250
Glass, plate	300
Painting	300
Sheet Metal	150
Tile floors, etc	250
Walks, etc., "Cement"	275
Screens, weather strips	150
Hot water	125
Decorations	500
Architect	450
Total	$9,000

Mr. Paque is thoroughly satisfied with his house, both as a home and as an investment, and considers it an ideal residence.

RESIDENCE OF MR. HENRY SCHULTZ, KENILWORTH, ILL.

The first glance at the photograph above would lead one to think that this was a monolithic concrete house. The massive chimney, walls and the heavy portals impress solidity and permanence upon one's mind, and it is hard to believe that this is a wooden frame house with a cement plaster coat. It was designed by Mr. George W. Maher of Chicago and is located in Warwick Place, Kenilworth, Ill., and owned by Mr. Henry W. Schultz.

The total cost of this residence was $10,394, itemized as follows:

Carpentry, form work and excavating	$5,300
Cement work and plastering	1,095
Plumbing	862
Heating	603
Wiring	130
Hardware	175
Fixtures	294
Glass and art glass	415
Painting	520
Miscellaneous	1,000

In the opinion of Mr. Schultz, his residence is just about all that a house should be, as the tone of his letter indicates:

"*Gentlemen:*—Replying to your favor of the 4th inst., I am pleased to say that although not of fireproof construction my building has been entirely satisfactory in every way. Painting and other expenses are reduced to a minimum. The house can be kept surprisingly cool in summer, and on the other hand is just as easily heated in cold weather. These are facts due entirely to the type of construction used."

Very truly yours,

(Signed) HENRY W. SCHULTZ.

MR. EDWARD MIDDLETON'S RESIDENCE, OAK PARK, ILL.

This large substantial house was designed by Beers & Beers, Orchestra Building, Chicago, and is the home of Mr. Edward Middleton, 303 Grove Ave., Oak Park, Ill.

It is a wooden frame house with No. 18 galvanized wire cloth over corrugated metal furring on both the interior and exterior. Three coats of plaster were put on the exterior, the last coat being rough cast. Universal Portland Cement was used.

The total cost of this house was $16,992, distributed as follows:

Excavating	$ 165
Carpentry and form work	4,947
Cement work, including reinforcement	1,420
Plastering	2,442
Plumbing	1,042
Heating	857
Wiring	179
Hardware	203
Fixtures	588
Glass	20
Painting	771
Sheet Metal	150
Property	3,000
Architectural services	700
Miscellaneous	508
Total	$16,992

Mr. Middleton's letter regarding his house reads:

"*Gentiemen:*—I wish to express my entire satisfaction with the results obtained through the use of Universal Portland Cement, which forms the entire finish of my residence, Grove Ave. and Randolph St., Oak Park, Ill.

I selected Universal Cement for my own residence as my experience with the many different brands offered proof that this brand would give the satisfaction desired for first class work.

The interior as well as the exterior is lathed with No. 18 Galvanized Wire Lath; in this way any serious damage by conflagration is avoided.

The cost could have been materially reduced had I used the ordinary form of wood lath construction instead of the wire lath throughout.

I am satisfied from the outlook that should I desire to sell the property the investment would prove satisfactory.

There is no sign of a break or crack in the exterior work, and the finish, which is the natural color of the cement, will not require painting.

One particular feature of a house of this construction *i. e.*, a frame work of wood studs lathed on both sides, assures a plentiful air circulation; in this way the weather and the moisture cannot penetrate to the interior, so that I am assured in the winter season of good warm quarters, and in the summer as cool as the weather permits.

In conclusion I wish to say that Universal Portland Cement was used for the sidewalks, the porch floor, as well as the entire exterior of the house. I was particular to wet the cement while it was setting and in this way I obtained whiteness of even quality, a finished effect both pleasing and satisfying."

Yours very truly,

(Signed) EDWARD MIDDLETON.

Concrete Park Bench, Lincoln Park, Chicago

MR. J. A. McDONALD'S RESIDENCE, LA GRANGE, ILL.

Mr. James A. McDonald's house, in LaGrange, Illinois, was designed by Mr. John N. Tilton, of Chicago, and built by Mr. Ole Anderson, of LaGrange; Mr. John Samuelson of LaGrange having the contract for the cement work.

The total cost was $9,350, itemized as follows:

General contract, including architect's fees	$7,917
Plumbing	183
Heating	123
Hardware	193
Fixtures	137
Glass and art glass	45

An idea of the house is best gained by reading an extract of Mr. McDonald's letter, which follows:

"My residence at 114 Sixth Avenue, La Grange, Illinois, was built in the fall of 1905, and has been occupied by myself and family since April, 1906. It is a rough cast cement plaster house, plastered on metal lath put over sheathing nailed to the studding.

"I am well pleased with the house, especially the cement plaster work. No cracks have appeared in same. Having lived in other houses, I am prepared to say it is cool in summer, warmer in winter than a frame house, and entirely free from dampness that is sometimes noticeable in brick houses. I do not expect to paint the house, aside from the exposed woodwork, casings, etc.

"So well pleased am I with the cement plaster that were I to build another residence it would be like this one, a cement plaster house."

MR. W. F. RENDER'S BUNGALOW, CHICAGO.

This little bungalow is owned by Mr. W. F. Render, and was designed by his son, Mr. Arthur R. Render. It is located at 2019 Estes Ave., Rogers Park, Illinois. Mr. Mathias Losch, 2017 Greenleaf Ave., Rogers Park, did the cement work, and the owner was the general contractor.

The house is of wooden frame construction, with an exterior coat of Portland cement mortar, applied on metal lath, and the cost was $4,018, which may be itemized as follows:

Excavating and masonry	$ 545
Carpentry and interior finish	1,852
Plastering and cement work	415
Plumbing	320
Heating	300
Wiring	65
Hardware	75
Fixtures	100
Glass	60
Painting	200
Sheet Metal	86

The Mission style of architecture was followed both on the interior and exterior, and the exterior trim is especially interesting. Mr. Render is very well pleased with his house, and considers it a satisfactory investment.

RESIDENCE OF MR. WM. A. FRÜHLING, HOLLYWOOD, CAL.

This house was built by the owner, Mr. Wm. A. Frühling, and is located at N. Highland and Cedar Streets, Hollywood, California.

The construction is of a composite type and is somewhat unusual. The regular wooden framing was put up and then heavy fencing spikes were driven at different angles into the face of the studding every six or eight inches. These formed a bond for a four-inch monolithic concrete wall, which was increased to six inches below the floor line.

Brown Bros., architects, of Cedar Rapids, Iowa, who designed the house of frame construction, give the cost as $4,000. Mr. Fruhling is satisfied with the building in a general way, and as an investment. He says that the house is fireproof from the outside, will not need any painting or repairing, is warm in winter, cool in summer, and moisture proof.

MISS CLARA L. WIGHTMAN'S BUNGALOW, GLENCOE, ILL.

The unique little bungalow of Miss Clara L. Wightman, is situated on Bluff Street, near Fletcher Avenue, in Glencoe, Illinois. It was designed by Mr. J. J. Flanders, of Chicago. The general contractor was Mr S. C. Castleman, of Washington Heights, Illinois, and Noernberg & Gehrity of Winnetka, Illinois, were the contractors for the cement work.

The house is of wooden frame construction, with an exterior coating of rough cast cement mortar on metal lath, and cost $3,600. Miss Wightman says: "We are greatly pleased with our cement bungalow, and it has proven itself a most satisfactory form of building.

"One great reason for using the cement was that of avoiding the expense of painting and of rotting of wood when vines are allowed to clamber, and we feel that we were very wise in our decision. I can see no necessity for its requiring painting or repairs. We found it delightfully cool and pleasant during the hot summer months, and we find it warm and comfortable in the cold weather. It is moisture proof—at least we have had no occasion to think otherwise."

RESIDENCE OF JUDGE PETER S. GROSSCUP, HIGHLAND PARK, ILL.

A beautiful example of modern architectural design is shown in this residence. Judge Peter S. Grosscup, of the United States Circuit Court of Appeals, is the owner of the house, which was designed by Marshall & Fox, of Chicago. The house is located in Highland Park, and with its broad lawns and beautiful shrubbery, it is a fitting example of more expensive type of American home.

The building is of heavy frame construction, with a pure white rough cast cement plaster coat applied to metal lath. The cost of this house could not be obtained. In regard to his residence, Judge Grosscup says:

"The house is very satisfactory to me. It is warm in winter, cool in summer, moisture-proof and beautiful. Since it received its coat of special paint, the color is uniform. Were I to build again, I would build the same kind of a cement house."

Cement Brick Residences

CEMENT bricks are one of the most easily manipulated building materials in which cement is used. They are made in machines in quantities from four to several hundred bricks at a time. The materials used are Portland cement and sand, in various proportions. The faces of the bricks may be made in practically any design and any color or combination of colors can be had, the effects thus obtained, being often most interesting and pleasing. Colored cement mortars may be employed in joining the bricks.

Cement brick houses cannot ordinarily be regarded as fireproof. The interior construction may, however, be such that they are practically so.

The advantages offered by cement brick over other brick are their comparative cheapness, greater resistance to fire, their durability and the greater diversity of effects obtainable in colors and surface finishes.

RESIDENCE OF MR. OTTO S. LOFGREN, MINNEAPOLIS, MINN.

This cement brick house was designed by Mr. Holden and built by Mr. Swan Nelson, both of Minneapolis, Minn. The total cost was $6,000.

RESIDENCE OF MR. WM. C. BALL, BROWNSTOWN, IND.

This cement brick house is located at Brownstown, Indiana. It was designed by Mr. M. C. Prichett, of Bedford, Indiana, and was built by the owner, Mr. Wm. C. Ball. The total cost of the dwelling was $5,000.

MR. JOHN WAGNER'S RESIDENCE, BLUE ISLAND, ILL.

The residence of Mr. John Wagner, 178 Prairie Street, Blue Island, Illinois, was designed and built by Mr. Ed. H. Rossner, 280 Walnut Street, Blue Island.

The foundations are constructed of rock-face cement block. Above the foundations cement brick are used, and the roof is covered with asbestos shingles. At the time the photograph was taken, the house was in an incomplete condition, the porch floor, steps and railing being unfinished. When completed, the house will cost $4,100, which includes polished oak floors throughout, oak trim downstairs, and pine upstairs.

The owner is thoroughly satisfied with the building in every way, and considers his investment a good one. He says his house is practically fireproof, absolutely moisture-proof, and that it will not need any painting or repairing. Owing to the fact that he had but recently moved into it, he could not give any data regarding the uniformity of temperature, but it is his opinion that the house will be very satisfactory in this respect.

MR. OSCAR W. NELSON'S RESIDENCE, MAYWOOD, ILL.

The residence of Mr. Oscar W. Nelson is located at 400 South First Avenue, in Maywood, Illinois, and is constructed entirely of cement brick. The lions' heads on each side of the porch entrance weigh seven tons each, and are set in a bed of concrete. No water-proofing was used on the building except that the foundations, which were made of cement block, were painted with asphalt. Universal Portland Cement was used throughout.

Mr. Nelson designed and built his home, and gives the cost as $8,000. He is thoroughly satisfied with the building in a general way, and says the investment has proven satisfactory, and also that the house is practically fire-proof and moisture-proof, warm in winter and cool in summer, and will need no painting or repairing. He says the maintenance is almost nothing, and for five years his insurance has only amounted to a little more than $6.00.

MR. DICK TYLER'S BUNGALOW, CONNEAUT, OHIO.

This little bungalow is the home of Mr. Dick Tyler, Conneaut, Ohio, and was designed and built by the owner.

The house is built entirely of cement brick, and the hollow wall construction was used. Rock faced cement brick were used for the exterior, and smooth faced for the interior. The inner section of the wall was built faster than the outer, and kept tarred as a preventive of dampness. The foundations are of solid concrete. Universal Portland Cement was used throughout.

The total cost of the house was $4,038, itemized as follows:

Excavating	$ 50
Carpentry and interior finish	1,100
Cement work	1,000
Roof and mantels	400
Plastering	150
Plumbing	400
Heating	375
Wiring	60
Hardware	150
Fixtures	150
Glass	90
Copper flashing	70
No. 125 Tie wire	31
2 Bbls. Asphalt tar	12

Mr. Tyler says that he is thoroughly satisfied with the building in every way, and that, as an investment, it has proven satisfactory. He says the house is practically fireproof, and there is nothing to burn but the finish, and that it will not need any painting or repairing for a hundred years; that it is warm in winter and cool in summer, and absolutely moisture-proof, as he made a twenty-four hour hose test.

Miscellaneous Cement Houses.

Cement and the Home Interior.

The Cement Exterior.

REINFORCED CONCRETE BUNGALOW OF MR. LELAND G. CUMMINGS.

This bungalow was designed and constructed by Mr. W. H. Parrish, at Rosslyn Farms, Pa., a suburb six miles from Pittsburg. It was constructed of reinforced concrete, has five large rooms and a bath on the first floor, and two rooms on the second floor, is equipped with all modern conveniences, and cost less than $4,000. Mr. Leland G. Cummings is the owner.

The method of construction used in building this bungalow was somewhat unique. Wooden studding was raised as in the usual frame construction. For the inside form, planks were set up between the studding, flush with the inside edge, and held in position by one inch bracing strips. The outside forms were built on two by six inch stock, spaced opposite alternate studs. Spacing blocks were placed between the studding and the outside form, wire being used to hold the form against the blocks. Over the basement windows, a two inch angle iron was placed, and above and below the first floor windows, one half inch wire cables, running clear around the house, were imbedded in the concrete. The interior and exterior surfaces are Portland cement plaster coats, sand finished.

The two bungalows shown on the following page were built by Mr. Parrish at a cost of less than $4,000 each.

Reinforced Concrete Bungalow of Mr. Richard G. Harris,
Rosslyn Farms, Pa.
Mr. W. H. Parrish, Architect and Contractor.

Reinforced Concrete Bungalow of Mr. J. F. Baker,
Rosslyn Farms, Pa.
Mr W. H. Parrish Architect and Contractor.

Reinforced Concrete Residence of Mr. John U. Sebenius,
Duluth, Minn.
Bray & Nystrom, Duluth, Architects.

Reinforced Concrete Residence of Mr. Fred Pabst, Jr.,
Oconomowoc, Wis.
Ferneckes & Cramer, Milwaukee, Architects. Newton Engineering Co., Milwaukee, Contractors.

Residence of Mr. Alexander S. Cochran, Esq.,
East View, N. Y.

Mr. Robert W. Gardner, New York, Architect. Mr. Benj. A. Howe, New York, Engineer and Contractor.

Residence of Wm. C. DeLanoy, Esq.,
Short Hills, New Jersey.

Mr. John A. Gurd, New York, Architect. Mr. Benj. A. Howes, New York, Engineer and Contractor.

Reinforced Concrete Residence of Sumner B. Pearmain, Esq.,
Framingham, Mass.

Mrs. S. B. Pearmain, Framingham, Mass., Architect. Mr. Benj. A. Howes, New York, Engineer and Contractor.

Reinforced Concrete Residence of Mr. Maitland F. Griggs,
Ardsley on the Hudson, N. Y.

Mr. Robert W. Gardne. New York. Architect. Mr. Benj. A. Howes. New York. Engineer and Contractor.

Reinforced Concrete Residence of Mr. E. L. Ryerson,

Lake Forest, Ill.

Mr, Howard V. Shaw, Chicago, Architect. William Adams Co., Chicago, Contractors.

Another View of the Ryerson Residence.

The above house, owned by Mr. Angelo, is situated at 2133 Alvarado Street, Los Angeles, Cal. Brown Bros., architects, of Cedar Rapids, Iowa, designed this house and give the cost as $8,000.

Residence of Mr. Samuel Schenk. Cost $5,000.
Harvard Boulevard, Los Angeles, Cal.
Brown Bros., Architects, Cedar Rapids, Iowa.

Brown Brothers, architects, of Cedar Rapids, Iowa, designed this bungalow. It is an unusually artistic combination of cobble stone foundation, cement plastered walls, and red tile roof.

The arrangement of rooms is somewhat different than that of the ordinary bungalow type. On each side of the pergola porch are two large rooms, one used as a dining room and the other a living room. They are connected by a long hall, which leads into the kitchen at one end, and a den at the other. Back of the hall are three bedrooms and the kitchen opens onto a screened porch. There are also two large baths, a porch and a small vestibule under this roof, which makes quite a fair-sized house. The total cost was $8,000. Mr. C. H. Garvey, 215 Palmetto Ave., Pasadena, Cal., is the owner.

This house is located in West Lake Park, Los Angeles, California, and is owned by Mr. Painter. The arrangement is somewhat novel, showing the front portion of the house one story, with the balcony above, and the central portion full two stories. Brown Brothers, architects, of Cedar Rapids, Iowa, give the cost of the house as $6,000.

Nine Room Cement House. Cost $6,000.

Mr. C. C. Clark Architect, Altadena, Cal.

Eight Room Cement House of Mr. E. P. Gates. Cost, $5,000.

Pasadena, Cal.

Pompeian Cement House of Mr. H. I. Drummond. Cost $6,500.

Pasadena, Cal.

Fifteen Room Cement House.

Mr. F. L. Rochrig, Architect, Pasadena, Cal.

A $12,000 Cement House.

Mr. F. L. Rochrig, Architect, Pasadena, Cal.

Fourteen Room Cement House.

Mr. J. J. Blick, Architect, Pasadena, Cal.

A Cement House that Illustrates the Possibilities of Cobble Stone Ornamentation.

Mr. C. W. Buchanan, Architect, Pasadena, Cal.

Cement Residence of John D. Culbertson,
Sewickley, Pa.

Cement and the Home Interior

THE average individual probably has an unfavorable impression of exposed cement surfaces for the interior of homes and is little acquainted with the practically unlimited artistic possibilities offered by cement for interior use. Herewith are a few illustrations showing some applications of cement in the interior of residences. It will be seen that cement, properly treated, may make a warm and delightful interior, with an atmosphere of charm and simplicity.

The mantel illustrated is a striking example of intricate detail in ornate design, which can be obtained by the use of cement. This mantel, which is to be found in Marshall Field's retail store at Chicago, shows very clear and sharply cut detail, although the design is quite complicated. The bench in the foreground, although of very massive appearance, is really not as heavy as it appears.

Concrete Mantel in Marshall Field's Store, Chicago, Ill.

The great length of span possible in concrete beams is an advantage of considerable importance in planning rooms of large dimensions unobstructed by pillars. The low, flat concrete arch is far more natural and beautiful than one of wooden construction. The latter is highly artificial and occupies greater space.

Concrete benches, tables, chairs, flower boxes, vases, fountains, colored floor tile and panels, are examples of the large range of possibili-

Bedroom Fireplace—DeLanoy House.

ties of cement for use in the interior of homes. They may be executed in practically any design, plain or ornamental; various textures and many colors may be had by subjecting the concrete to special treatment.

Two artistic concrete mantels from the house of Mr. Wm. C. DeLanoy, are shown in the accompanying photographs. The beautiful simplicity and atmosphere of refinement which is expressed by these mantels can be obtained with no other building material.

A whole chapter could be written on designs for cement fireplaces. They range from the simple ones just shown to the excellent imitations of carved marble and Caen stone examples.

Bedroom Fireplace—DeLanoy House.

Music Room in the Pearmain House.

There is one great advantage besides fireproofness in a house with concrete interior trim and concrete floors, walls and roof and that is the ease with which it may be kept spotlessly clean. Upon removal of the rugs, furniture and hangings, a hose may be turned upon the interior without doing a particle of damage.

Fireplace in the Music Room—DeLanoy House.

Fireplace in the Griggs House.

A fairly typical fireplace is the one in the Griggs house, which has a lintel of rough concrete. This was designed for a smooth finish, and the workmen were preparing to cover up the slab of rough concrete when the owner found them. "Leave that just as it is," he cried; and, indeed, it has turned out the most successful, because the most expressive fireplace in the house.

The fireplace in the dining room of the Pearmain house, is a most attractive one. Heavy bracketed pillars support a plain lintel. Above the shelf, the plain surface is decorated with the Pearmain insignia in relief.

Another attractive fireplace is in the music room. The design is plain, except for the sculptured figures on each side, which were executed in place by Mr. L. O. Laurie. The trim of this room is pure white cement, smooth troweled, and the book-cases, bench, column capitals, etc., are of solid concrete.

Fireplace in the Dining Room—Pearmain House.

For bedrooms, the simple forms, lined with cement brick, are very pleasing, but for a dining room, the warm gray cement is perhaps the best of all.

Mrs. Pearmain designed her home and Mr. Benj. A. Howes built it. It is surely a most artistic and attractive residence. Mr. Howes also built Mr. Wm. C. DeLanoy's residence in Short Hills, New Jersey, which was designed by Mr. John A. Gurd, of New York. The illustration on the following page shows an interior view taken in this house. The wall is marked off in blocks

Stairway and Entrance to Library in the DeLanoy House.

which have been roughened. The concrete stairway, with its smooth sand finish, was intended originally to be crowned with a wooden rail, so that it would be easier on the hand, but the beauty of the concrete so appealed to the owner, that he had it left just as shown.

The field of interior decoration, with reinforced concrete is unlimited. This is accounted for by the plasticity and ease with which this wonderful material can be molded into any desired shape. The statement often has been made that concrete is the coming building material, but it is no longer coming; it is here, and the sooner the public realize the value of this material, just so soon will we have comfortable, beautiful, permanent homes.

The Cement Exterior

THE surfaces of concrete structures need not necessarily present the somber, monotonous appearance which it undoubtedly possesses in the opinion of many. The ordinary surface finish, it is true, has a lifeless, unattractive aspect. It is possible, however, to so treat cement surfaces so that they will be highly pleasing and interesting. Concrete is in fact a most admirable material for the exterior ornamentation of residences. It can be molded into many shapes, may be colored as desired and by the use of colored sands, pebbles, stones and tile various striking effects can be obtained.

Reduced one-half of original size.

Rough-Cast Concrete Surface.
(Screened Gravel)

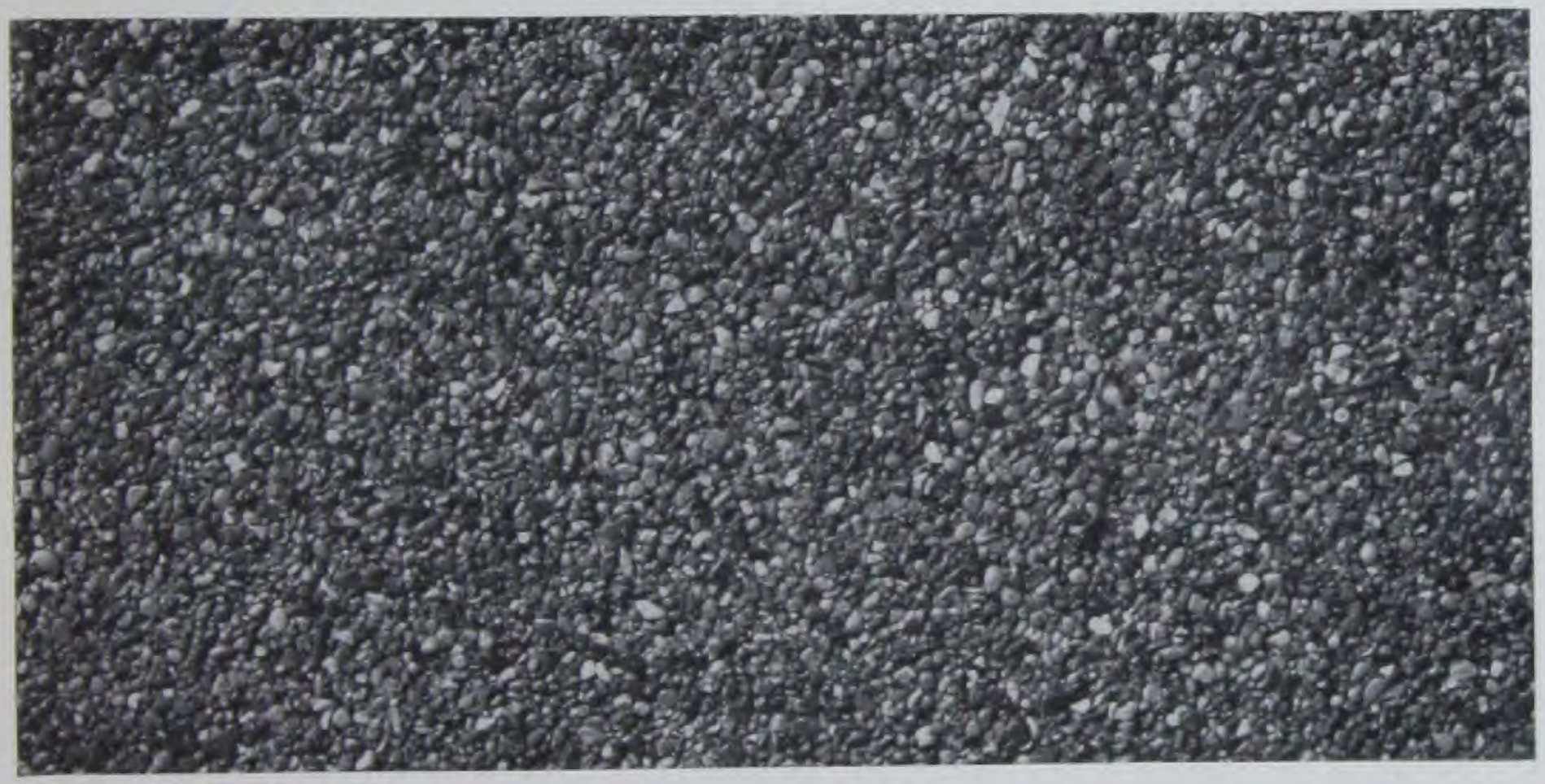
One surface finish is known as the rough cast finish. Torpedo sand, cement and water are mixed in proportions to get a sticky mass and then thrown on the wall with a paddle or heavy wire brush. A variation of this is known as the pebble dash finish. This is obtained by the use of pebbles and sand. It is quite popular on account of the fact that a mixed gravel can be used without screening. Fine cinders are sometimes used in place of gravel to secure the rough effect; granite screenings may also be employed, the result being a highly artistic rough finish.

Rough-Cast Concrete Surface.
(Granite Screenings)

There are many other special treatments to which concrete may be subjected which will produce effects in striking contrast to the ordinary cement finish seen in sidewalk surfaces. The cement surface as represented in the sidewalk is obtained by using a mixture of fine sand, cement and water. It is carefully smoothed with a wooden float and finished with a trowel. The resulting color is dependent largely upon the natural color of the cement.

Brushed, Pebble Concrete Surface.

A beautiful surface can be secured by what is called washing and brushing the exterior. Gravel with as many colored pebbles as can be obtained is used, marble chips sometimes being added for contrast. When the concrete has set sufficiently for the forms to be taken off, the surface is washed with water, or dilute hydrochloric acid, and scrubbed with a wire brush. The loose cement is thus removed from the surface of the pebble, leaving the natural colors of the stones, shown in an indiscriminate array, that is distinctly pleasing.



Reduced one-half of original size.

Brushed, Torpedo Sand Concrete Surface.

A surface with a smoother texture can be made by using fine, even gravel, as shown in the accompanying photograph. On the cover of this booklet is shown a reproduction of a brushed pebble concrete surface in natural colors. No other building material has the refined atmosphere of these vari-colored stones, with their background of grey cement; the whole arranged in an accidental distribution which is decidedly artistic, and not at all artificial looking.

Another method of finishing a concrete surface, which has the advantage of being applicable after the concrete has set for any length of time, and can be accomplished without previous preparation of the surface, is bush-hammering. This consists essentially of taking off about one-fourth of an inch of the surface by chipping it with a heavy hammer. The hammer generally used weighs about nine pounds, and has rows of pyramidal projections on each end. The ends of the hammer are two inches square. It has been found that the points should be pyramids two-thirds of an inch apart, and that sixteen or twenty-five points on each end give the best results.

Attractive designs and effects can be secured by the use of combinations of the different concrete surfaces. The attractive loggia, shown in

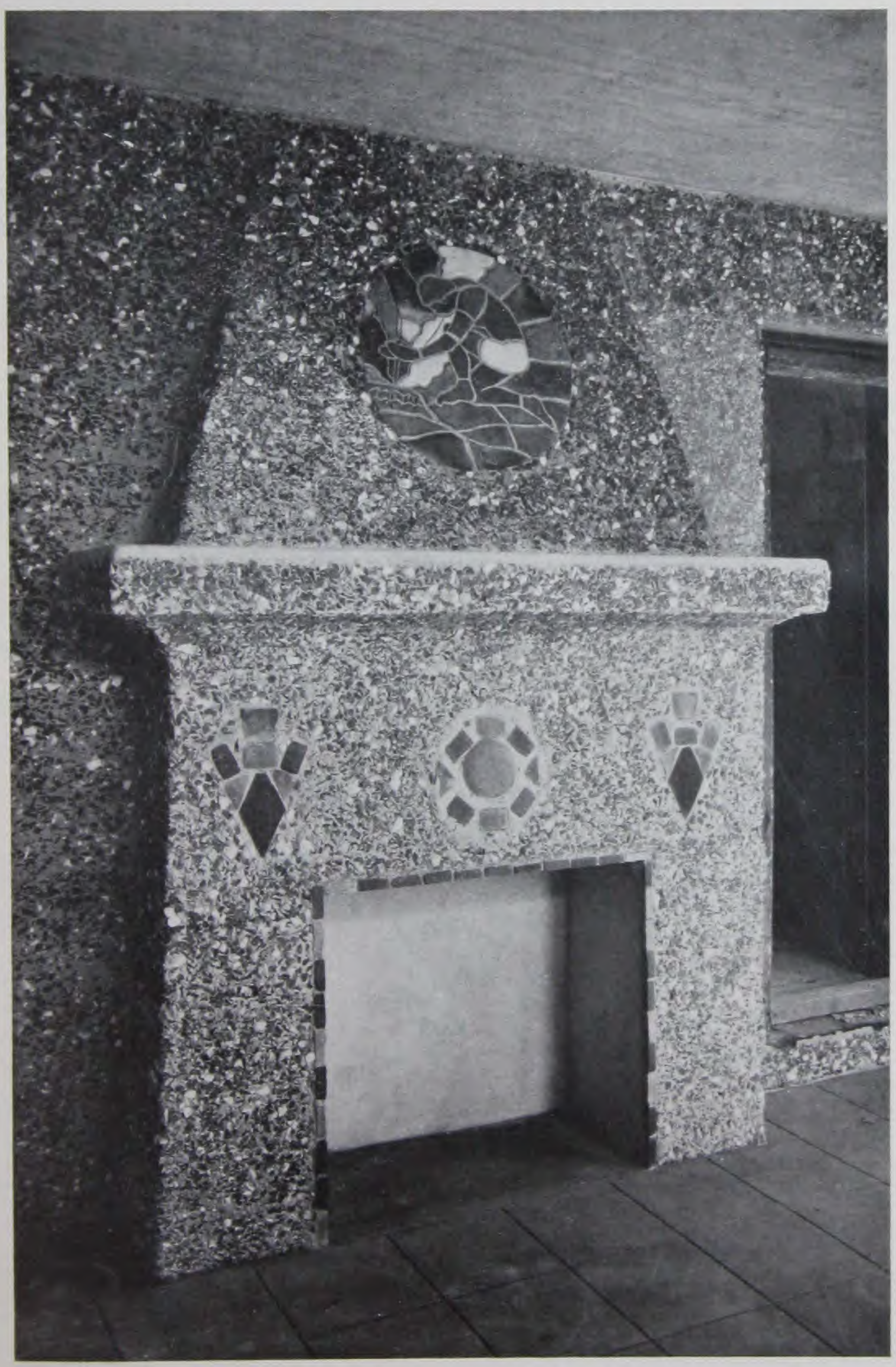
the accompanying view, is from the reinforced concrete residence of Mr. Maitland F. Griggs, at Ardsley, on the Hudson, New York. This house was designed by Mr. Robt. W. Gardner, a New York architect, and built by the owner, under the supervision of Mr. Benj. A. Howes, 15 West 38th Street, New York City.

The exterior surface of the residence was produced by dashing on a mixture of cement and pebbles, the trim being smooth troweled. This balcony is a striking example of what can be done with concrete as an exterior decoration, and also an excellent illustration of the cantilever in concrete, forming as it does, an unsupported porte-cochere, and illustrating the massive, moulded effects.

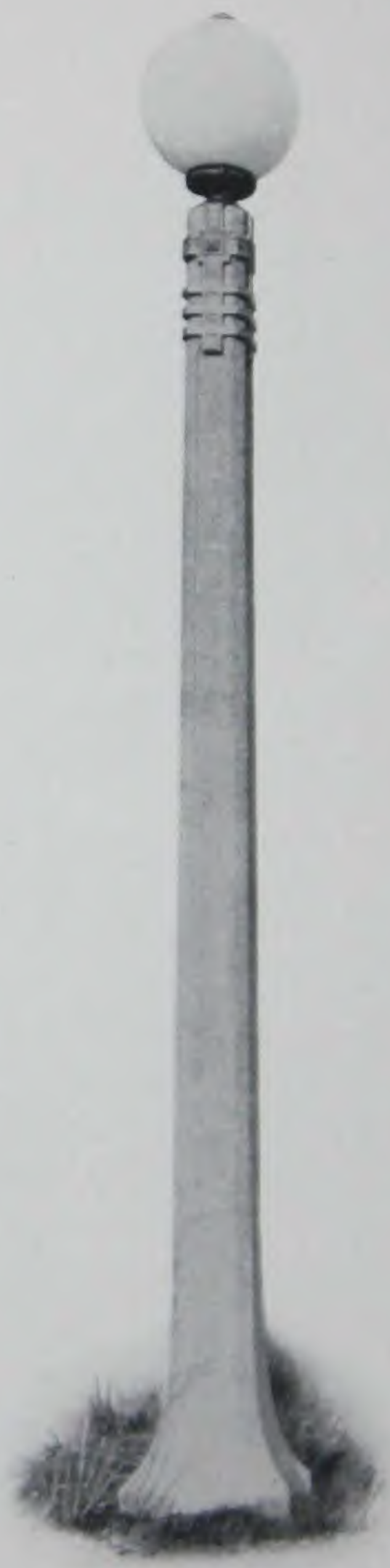
Another method of ornamenting concrete, is the use of inlaid colored clays. Permanent, weather-proof color can be burned into clay, and large pictures or mosaics made, not by building up the design with minute tesserae, but by boldly cutting it out of slabs of colored clay. These are burnt and reassembled and dropped into a bed of cement, and thus a mosaic is made. Beautiful examples of this kind of decoration are used in the residences of Mr. Albert Moyer and Mr. H. B. Green. Under the windows and gables, various designs appear in tinted clays, giving a pleasing effect which adds instead of detracts from the beautiful surface of the natural concrete.

The photograph on the following page illustrates a tile mosaic on the south porch of Mr.Moyer's house. This pattern, "Indian Making Fire," which was designed by Mr. Henry C. Mercer, is twenty inches in diameter, and consists of pieces of clay, burned in many colors, and unglazed. It would be practically impossible to think of this design of fireplace and ornamentation in marble, brick, granite or wood. Nothing but concrete could give the atmosphere of refinement expressed by this fireplace.

Loggia on the Griggs House.



Fireplace on South Porch—Mr. Albert Moyer's Residence.



A Concrete Lamp Post on Lake Shore Drive
Chicago.

Entrance to Residence of P. A. Valentine
Lake Oconomowoc, Wis.

Universal is Uniform

Uniform in soundness—
Uniform in strength—
Uniform in fineness—
Uniform in color—
Uniform in specific gravity—
Uniform in setting qualities—
Uniformity means superiority.

Use Universal—it produces uniformly excellent results.

Universal
Portland Cement Co.
Chicago — Pittsburg


UNIVERSAL PORTLAND CEMENT COMPANY
UNIVERSAL
PORTLAND
CEMENT
CHICAGO - PITTSBURG